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TRANSPORTATION THEORY

(Question & Answer Format)



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Disclaimer: This study material is only for the guidance of trainees. This material is not a rule book. For rules GR & SRs, Operating Manual, Accident Manual, Block Working Manual and relevant Correction Slips, etc of South Eastern Railway shall be referred to.

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PREFACE

Instructors of Zonal Railway Training Institute, SINI have prepared this study material on Transportation Rules for the guidance of the trainees. The study material covers various topics from G&SR, Operating manual, Accident Manual, Carriage and Wagon & Working in electrified section. The study material is prepared in question & answer format for the better understanding of the trainees. However, the study material is only an aid or guide to help the trainees to understand the subject. Hence, it should not be looked into as a substitute to General Rules, Operating Manual, Accident Manual or Block working Manual. If there is any confusion or doubt the above Manuals must be positively referred. However, it is reiterated that this book is only a guide in helping the student to easily understand the subject, it is not a substitute to the GR/SR, Operating Manual, Accident Manual and Block working Manual.

We hope that the study material will help to enhance knowledge and will prove beneficial to the trainees.

Any suggestion or modification will be cordially accepted.

**Principal
ZRTI/SINI/SER**

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ORGANISATIONAL STRUCTURE OF INDIAN RAILWAYS

MINISTER OF RAILWAY

MINISTER OF STATE FOR RAILWAY

CHAIRMAN RAILWAY BOARD (CRB)
&
CHIEF EXECUTIVE OFFICER (CEO)

Directly
Reporting Officers

Member Operation &
Business Development

Additional Member
(Traffic Transportation)

Principal Executive
Director (TTM)

Principal Executive
Director (CHG)

Additional Member
(Tourism & Catering)

Additional Member
(Commercial)

Additional Member
Marketing & Business
Development & IT

Member
Infrastructure

Additional Member
(Works)

Additional Member
(Civil Engineering)

Principal Executive
Director (Bridge)

Additional Member
(Telecom)

Additional Member
(Signal)

Principal Executive
Director (Signal)

Additional Member
(Land & Amenities)

Principal
Executive Director
(Station Development)

Additional Member
(Railway Electrification)

Member
Finance

Addl. Member
(Finance)

Addl. Member
(Budget)

Sr. Economic
Advisor

Addl. Member
(Revenue)

Pr. Executive
Dir. (Accounts)

Member Traction
& Rolling Stock

Addl. Member
(Production Unit)

Addl. Member
(Mech. Engg.)

Addl. Member
(Environment &
House Keeping)

Addl. Member
(Traction)

Pr. Executive
Dir. (Electrical
Maintenance of
Rolling Stock)

Addl. Member
(Rolling Stock)

Secretary
Railway Board

Director
General (RPF)

Pr. Executive
Dir. (Vigilance)

Addl. Member
(Planning)

Pr. Executive
Dir. (Infra)

Dir. General
(Safety)

Pr. Executive
Dir. (Safety)

Director General
(Human Resource)

Pr. Executive Director
Training & Man
Power Planning.

Additional
Member (Staff)

Legal Advisor

Director General
(Railway Health Service)

Pr. Executive Director
(Health)

Q. (1) Define the following terms?

- **ADEQUATE DISTANCE:** - means the distance sufficient to ensure safety.
- **APPROVED SPECIAL INSTRUCTIONS (ASI):** - means special instruction approved of or prescribed by the Commissioner of Railway Safety (CRS).
- **AXLE COUNTER:** - means an electrical device which, when provided at two given points on the track, proves by counting axles in and counting axles out, whether the track between the said two points is clear or occupied.
- **AUTHORITY TO PROCEED:** - means the authority given to the LP of a train, under the system of working, to enter the block section with his train.
- **AUTHORIZED OFFICER:** - means the person who is duly empowered by general or special order of the Railway Administration, either by his name or by virtue of his office, to issue instructions or to do any other thing.
- **BLOCK SECTION:** - means that portion of the running line between two block stations on to which no running train may enter until line clear has been received from the block station at the other end of the block section.
- **BLOCK BACK:** - means to dispatch a message from a block station intimating to the block station immediately in rear on a double line, or to the next block station on either side on a single line, that the block section is obstructed or is to be obstructed.
- **BLOCK FORWARD:** - means to dispatch a message from a block station on a double line intimating to the block station immediately in advance the fact that the block section in advance is obstructed or is to be obstructed.
- **COMMISSIONER OF RAILWAY SAFETY (CRS):** - means an Inspector appointed to exercise any function under the act, and includes an Addl. commissioner of railway safety.
- **COMPETENT RAILWAY SERVANT:** - means a railway servant duly qualified to undertake and perform the duties entrusted to him.
- **CONNECTIONS:** - when used with reference to a running line, means the points and crossings or other appliances used to connect such line with other lines or to cross it.
- **CONTROLLER:** - means a railway servant on duty who may for the time being be responsible for regulating the working of traffic on a section of a railway provided with the system of speech communication.
- **DIRECTION OF TRAFFIC:** - means -
On Double Line, the direction for which the line is signalled, or
On Single Line, the direction for the time being established under the system of working, to allow trains to move in that direction.

- **LOCO PILOT:** - means the engine Loco Pilot or any other competent railway servant for the time being in charge of driving a train.
- **FACING AND TRAILING POINTS:** - Points are facing or trailing in accordance with the direction a train or vehicle moves over them. Points are said to be facing points when by their operation a train approaching them can be directly diverted from the line upon which it is running
- **FIXED SIGNAL:** - means a signal of fixed location indicating a condition affecting the movement of a train and includes a Semaphore arm/disc/ fixed light for use by day and fixed light for use by night.
- **FOULING MARK:** - means the mark at which the infringement of fixed Standard Dimensions occurs, where two lines cross or join one another.
- **GOODS TRAIN:** - means a train (other than a material train) intended solely or mainly for the carriage of animals or goods.
- **GUARD:** - means the railway servant in charge of a train and includes a Brakesman or any other railway servant who may for the time being be performing the duties of a Guard.
- **INTERLOCKING:** - means an arrangement of signals, points and other appliances, operated from a panel or lever frame, so interconnected by mechanical locking or electrical locking or both that their operation must take place in proper sequence to ensure safety.
- **ISOLATION:** - means an arrangement, secured by the setting of points or other approved means, to protect the line so isolated from the danger of obstruction from other connected line or lines.
- **INTERMEDIATE BLOCK POST:** - means a class 'C' station on a single line or double line or multiple line remotely controlled from the block station in rear.
- **INTERMEDIATE BLOCK SIGNALLING:** - means an arrangement of signalling on a single line or double line or multiple line in which a long block section is split into two portions each constituting a separate block section by providing an Intermediate Block Post.
- **LSS:** - means the fixed stop signal of a station controlling the entry of trains into the next block section.
- **LEVEL CROSSING:** - means the intersection of road with railway track at the same level.
- **LINE CLEAR:** - means the permission given from a block station to a block station in rear for a train to leave the latter and approach the former; or the permission obtained by a block station from a block station in advance for a train to leave the former and proceed towards the latter.

- **MATERIAL TRAIN:** - means a departmental train intended solely or mainly for carriage of railway material when picked up or put down or for execution of works, either between stations or within station limits.
- **MAIN LINE:** - means the line ordinarily used for running trains through and between stations.
- **MIXED TRAIN:** - means a train intended for the carriage of passengers and goods or of passengers, animals and goods.
- **MULTIPLE ASPECT SIGNALLING:** - means a signalling arrangement in which signals display at any one time any one of the three or more aspects and in which the aspect of every signal is pre-warned by the aspect of the previous signal or signals.
- **'OBSTRUCTION'** and its cognate expressions include a train, vehicle or obstacle on or fouling a line, or any condition which is dangerous to trains.
- **PASSENGER TRAIN:** - means a train intended solely or mainly for the carriage of passengers and other coaching traffic, and includes a troop train.
- **'POINT AND TRAP INDICATORS'** are not signals, but are appliances fitted to and working with points to indicate by day or by night the position in which the points are set.
- **RUNNING LINE:** - means the line governed by one or more signals and includes connections, if any used by train when entering or leaving a Station or when passing through a station or between stations.
- **RUNNING TRAIN:** - means a train which has started under an authority to proceed and has not completed its journey.
- **SHUNTING:** - means the movement of a vehicle or vehicles with or without an engine or of any engine or any other self-propelled vehicle, for the purpose of attaching, detaching or transfer or for any other purpose.
- **SPECIAL INSTRUCTIONS:** - means instructions issued from time to time by the authorized officer in respect to particular cases or special circumstances.
- **STATION:** - means any place on a line of railway at which traffic is dealt with, or at which an authority to proceed is given under the system of working.
- **STATION LIMIT:** - means the portion of a railway which is under the control of a SM and is situated between the outermost signals of the station or as may be specified by special instructions.
- **STATION MASTER:** - means the person on duty who is for the time being responsible for the working of the traffic within station limits, and includes any person who is for the time being in independent charge of the working of any signals and responsible for the working of trains under the system of working in force.

- **SUBSIDIARY RULES:** - means a special instruction, which is subservient to the General Rule to which it relates and shall not be at variance with any General Rule.
- **SYSTEM OF WORKING:** - means the system adopted for the time being for the working of trains on any portion of railway.
- **TRACK CIRCUIT:** - means an electrical circuit provided to detect the presence of a vehicle on a portion of track, the rails of the track forming part of the circuit.
- **TRAIN:** - Train means an engine with or without vehicles attached, or any self-propelled vehicle with or without a trailer, which cannot be readily lifted off the track.
- **TWO ASPECT SIGNALLING:** - means a signalling arrangement in which each signal displays at any one time either of the two aspects.

Q. (2):- Describe in detail about the category and classification of station?

Ans. :- Stations are divided into TWO categories: -

1. BLOCK STATIONS are those at which the driver must obtain an authority to proceed under the system of working to enter the block section with his train. Block stations are classified into FOUR classes; A, B, C and Special.

‘A’ class station: - Where line clear may not be given for a train unless the line on which it is intended to receive the train is clear for at least 400 m. beyond the Home signal, or upto the Starter.

‘B’ class station: - Where line clear may be given for a train before the line has been cleared for the reception of the train within the station section.

‘C’ class station: - Block Huts, Where line clear may not be given for a train unless the whole of the last preceding train has passed complete at least 400 m. beyond the Home signal, and continuing its journey. This will also include an Intermediate Block Post.

‘Special’ class station: - Any station which can not be worked under A, B, C or D class conditions is termed ‘Special’ class.

2. NON - BLOCK STATIONS or class ‘D’ stations are stopping places which are situated between two consecutive block stations and do not form the boundary of any block section. Passenger halts (PH) and Flag Stations (FS) are class ‘D’ stations. ‘DK’ stations are also class ‘D’ stations with siding facility.

Q. (3):- DIFFERENTIATE BETWEEN

GENERAL RULE	SUBSIDIARY RULE
<ol style="list-style-type: none"> 1. GR is framed by the Railway Board on behalf of the Govt. of India. 2. It is applicable to all Zonal Railways. 3. It is revised by the Railway Board. 4. It is not prefixed. 5. It is printed in bold letters. 6. Object of GR is safety in train operations, regulate the use of working and efficient management of the Railways. 	<ol style="list-style-type: none"> 1. SR is framed by the Authorised Officer on behalf of the GM. 2. It is applicable to the concerned Zonal Railway. 3. It is revised by the Authorised Officer. 4. It is always prefixed SR. 5. It is printed in small letters. 6. Object of SR is to supplement, clarifying, amplifying or simplifying the GR.
FACING POINT	TRAILING POINT
<ol style="list-style-type: none"> 1. Point are said to be facing when by their operation a train approaching them can be diverted from one line to another. 2. Locking is essential 3. Facilitate diverging movement. 4. Speed of train over facing point is restricted. 	<ol style="list-style-type: none"> 1. Points are said to be trailing when by their operation a train approaching them can not be diverted. 2. Locking is not always essential. 3. Facilitate converging movement. 4. Speed over trailing point is not restricted.
BOL	SOL
<ol style="list-style-type: none"> 1. It stands for Block Over Lap. 2. It is kept clear for granting line clear. 3. It is reckoned from FSS. 4. It shall not be less than 400M/180M in TAS/MLQ & MAS signalling respectively. 5. There is no substitute of BOL. 6. It is the portion of block section. 7. BOL is on the reception sides. 	<ol style="list-style-type: none"> 1. It stands for Signal Over Lap. 2. It is kept clear for taking "OFF" Home Signal. 3. It is reckoned from starter on D/L & outermost trailing point on S/L & under approved special instruction from the place where the train comes to stop. 4. It shall not be less than 180M/120M in TAS/ MLQ & MAS signalling respectively. 5. There are substitutes of SOL. 6. It is not the portion of block section. 7. SOL is on the departure side.
MAIN LINE	RUNNING LINE
<ol style="list-style-type: none"> 1. Means the line ordinarily used for running trains through and between stations. 2. Every main line is running line. 3. On single line, there is only one main line. 	<ol style="list-style-type: none"> 1. Means the line governed by one or more signals. 2. Every running line is not main line. 3. On single line, there may be more than one running line.

<p style="text-align: center;">AUTHORITY TO PROCEED</p> <ol style="list-style-type: none"> 1. Means the authority given to the LP of a train under the system of working to enter the block section with his train. 2. It is a transaction between SM and LP. 3. It follows line clear. 4. It may be tangible or intangible. 5. A train cannot run without authority to proceed under any situation. 	<p style="text-align: center;">LINE CLEAR</p> <ol style="list-style-type: none"> 1. Means the permission given from a block station to the block station in rear for a train to leave the latter and approach the former. 2. It is a transaction between two SMs/CMs. 3. It precedes authority to proceed. 4. It is obtained by the means of electrical communication instruments. 5. A train can run without line clear if situation arises.
<p style="text-align: center;">POINT INDICATOR</p> <ol style="list-style-type: none"> 1. Normally point indicator is provided with non interlocked point. 2. Point indicator has two white discs/lights and two green disc/lights. 3. When the point is set for loop line, it shows green light/disc. 4. When the point is set for main line, it shows white disc/light. 5. Speed restriction is essential. 	<p style="text-align: center;">TRAP INDICATOR</p> <ol style="list-style-type: none"> 1. Trap indicator is provided with trap point. 2. Trap indicator has two red discs/lights and two green disc/lights. 3. When trap point is closed, it shows green light/disc. 4. When trap point is opened, it shows red light/disc. 5. No speed restriction.
<p style="text-align: center;">BLOCK SECTION</p> <ol style="list-style-type: none"> 1. It is the portion of running line between two block stations. 2. It is available between 'A', 'B', 'C' & 'Special' class stations. 3. To perform shunting in block section, block forward/block back is generally required. 4. Generally points & crossings are not provided. 5. In case of obstruction, protection of line is essential. 	<p style="text-align: center;">STATION SECTION</p> <ol style="list-style-type: none"> 1. It is the portion of station limit. 2. It is available at 'B' class station only. 3. To perform shunting in station section block back or block forward is not required. 4. Points & crossings are always provided. 5. In case of obstruction, protection of line is not essential.
<p style="text-align: center;">STOP SIGNAL</p> <ol style="list-style-type: none"> 1. LP is required to stop when it is 'ON'. 2. It has square ended arm. 3. These are of different types. 4. It is always working. 5. When the signal is at 'ON', LP cannot pass this signal without any authority. 6. It is painted red with white bar in case of Arm type signal. 	<p style="text-align: center;">PERMISSIVE SIGNAL</p> <ol style="list-style-type: none"> 1. LP is not required to stop when it is 'ON'. 2. It has fish tailed arm. 3. These are of two types i.e. 'Warner' and 'Distant'. 4. Warner signal may be working or dummy. 5. When the signal is at 'ON', LP can pass without any authority. 6. It may be painted red with white bar or yellow with black bar in case of Arm type signal.

<p style="text-align: center;">WARNER SIGNAL</p> <ol style="list-style-type: none"> 1. It is provided in TAS/MLQ signalling. 2. It may be placed either on a post by itself or below the FSS/LSS. 3. It has two aspects i.e. 'Proceed with caution' and 'Proceed'. 4. It may be a working or dummy. 5. It is taken 'OFF' only for run through trains over main line. 6. It has fish-tailed arm and painted red with white bar in semaphore signalling. 7. It is found at 'A' 'B' & 'C' class stations. 8. Provision of double Warner is not there. 9. Fixed green light is provided when placed on a post by itself. 	<p style="text-align: center;">DISTANT SIGNAL</p> <ol style="list-style-type: none"> 1. It is provided in MAS/MLQ signalling. 2. It is placed on a post by itself. 3. It has two/three aspects i.e. Caution, Attention & Proceed. 4. It is always working. 5. It is taken 'OFF', either for stopping/run through trains. 6. It has fish-tailed arm and painted yellow with black bar in semaphore signalling. 7. It is found at 'B' & 'C' class stations. 8. Provision of double distant is there. 9. No such light is provided.
<p style="text-align: center;">CALLING ON SIGNAL</p> <ol style="list-style-type: none"> 1. It is of two types. 2. It may be placed below any stop signal except the LSS. 3. It is always placed below a stop signal. 4. It shows no light in 'ON' position. 5. It can't be taken 'OFF' unless the train has come to a stop at the foot of the signal. 6. When it is taken 'OFF', it indicates to proceed with great caution and be prepared to stop short of any obstruction. 7. Only one calling-on signal is provided below a stop signal. 8. In colour light signalling, it is distinguished by a 'C' marker. 	<p style="text-align: center;">SHUNT SIGNAL</p> <ol style="list-style-type: none"> 1. It is of three types. 2. It may be placed below any stop signal except FSS. 3. It may be placed on a separate post. 4. It shows light in 'ON' position when placed on a post by itself. 5. There is no such provision. 6. When it is taken 'OFF', it indicates to proceed with caution for shunting purpose. 7. More than one shunt signal may be provided on the same post. 8. It has no marker.
<p style="text-align: center;">DIRECT RECEPTION</p> <ol style="list-style-type: none"> 1. In it, a train is received without stopping at the FSS. 2. SOL must be kept clear for it. 3. The rules for direct reception apply to all the station except terminal station. 	<p style="text-align: center;">INDIRECT RECEPTION</p> <ol style="list-style-type: none"> 1. In it, a train is received after stopping at the FSS. 2. SOL is not required to be kept clear for it, unless interlocking prohibits. 3. The rule for indirect reception applies to all station.

REPEATING SIGNAL <ol style="list-style-type: none"> 1. It is provided when a stop signal cannot be seen from sighting distance. 2. It is a signal provided with an "R" marker. 3. It is placed in rear of the signal to which it refers. 4. It indicates the aspect of the signal ahead. 5. When it is defective, it can be passed at 'ON' and proceed cautiously. 	ELECTRIC REPEATER <ol style="list-style-type: none"> 1. It is provided to repeat the aspect of a signal to SM/CM when signal concerned is not visible to him. 2. It is not a signal but an electrical device. 3. It is provided at the place of operation. 4. It repeats the aspect of concerned signal. 5. When it is defective, the concerned signal shall be treated as defective.
AUTOMATIC STOP SIGNAL <ol style="list-style-type: none"> 1. It is provided only in automatic block system. 2. Normal aspect is proceed. 3. 'A' marker is provided. 4. It is not dependent upon manual operation 5. It is found in MACLS only. 6. It may be passed at 'ON' after waiting for one minute by day & two minute by night. 7. It is found between the two block stations in automatic block system. 	MANUAL STOP SIGNAL <ol style="list-style-type: none"> 1. It is provided in all system of working. 2. Normal aspect is stop. 3. Generally no marker is provided. 4. It is depend upon manual operation. 5. It is found in all signalling arrangement. 6. LP cannot pass it at 'ON' without proper authority. 7. It may be found between the two block stations or within station limit in all system of working.
AUTOMATIC STOP SIGNAL <ol style="list-style-type: none"> 1. It is distinguished by 'A' marker on white disc. 2. It always works automatically. 3. It is provided between two block stations. 4. No written authority is required to pass it at 'ON'. 5. No lever/button/switch is provided for its operation. 	SEMI AUTOMATIC STOP SIGNAL <ol style="list-style-type: none"> 1. It is distinguished by 'A' marker light on black background, lit/extinguished. 2. It may work automatically/manually. 3. It may be provided between two block stations or within station limit. 4. When working manually, written authority is required to pass it at 'ON'. 5. King lever/button/switch is provided for its operation.
CATCH SIDING <ol style="list-style-type: none"> 1. It protects station section. 2. The length of catch siding is more. 3. It is provided where the gradient is 1 in 80 or steeper. 4. It is interlocked with FSS. 5. It is provided at reception end. 	SLIP SIDING <ol style="list-style-type: none"> 1. It protects block section. 2. The length of slip siding is less. 3. It is provided where the gradient is 1 in 100 or steeper. 4. It is interlocked with the LSS. 5. It is provided at departure end.

SLB	BSLB
<ol style="list-style-type: none"> 1. SLB stands for shunting limit board. 2. It is provided at "B" class single line stations only. 3. It is provided in all signalling arrangement (TAS/MLQ/MAS). 4. It is a replacement of advanced starter. 5. It is provided inside/outside home signal. 6. It is provided at a distance of 400/180 m. ahead of the FSS. 7. 'SHUNTING LIMIT' is written on this board. 8. It is not related with outermost trailing point. 	<ol style="list-style-type: none"> 1. BSLB stands for block section limit board. 2. It is provided at "B" class double line stations only. 3. It is provided in MLQ / MAS signalling arrangement. 4. It is not a replacement of advanced starter. 5. It is provided inside home signal. 6. It is always provided at a distance of 180 m. ahead of the FSS. 7. 'BLOCK SECTION LIMIT' is written on this board. 8. It is provided where outermost point is trailing or there is no point.
IBP	IBH
<ol style="list-style-type: none"> 1. It stands for 'INTERMEDIATE BLOCK POST'. 2. It is remotely controlled by the block station in rear. 3. It is an unmanned 'C' class station. 4. Track circuit/Axle counter is essential. 5. The home signal of an IBP is distinguished by 'IB' marker. 6. Signal Post Telephone is provided. 7. It is provided on double line section. 8. Written authority is not essentially required to pass IBSS at 'ON'. 	<ol style="list-style-type: none"> 1. It stands for 'INTERMEDIATE BLOCK HUT'. 2. It is self controlled. 3. It is a manned 'C' class station. 4. Track circuit/Axle counter is not essential. 5. The home signal of an IBH has no marker. 6. There is no such provision. 7. It is provided on single/double line section. 8. Written authority is essentially required to pass IBSS at 'ON'.

Q. (4) :- Write down the Conduct of Railway servant? (GR-2.10)

Ans :- A railway servant shall-

- a. Wear the badge and uniform, if prescribed, and be neat and tidy in his appearance while on duty.
- b. Be prompt, civil and courteous.
- c. Not solicit or accept illegal gratification.
- d. Give all reasonable assistance and be careful to give correct information to the public.
- e. When asked, give his name and designation without hesitation.
- f. Railway servants when on duty and in contact with public or in uniform shall not indulge in smoking on platform.
- g. Shall switch off his mobile phone while doing duty.

Q. (5) :- What are the duties of railway servant for securing safety?

Ans :- (1) Every railway servant shall-

- a. See that every exertion is made for ensuring the safety of the public.
- b. Promptly report to his superior any occurrence affecting the safe or proper working of the railway which may come to his notice.
- c. Render on demand all possible assistance in the case of an accident or obstruction.

(2) Every railway servant who observes –

- a. That any signal is defective
- b. Any obstruction, failure or threatened failure of any part of the way or works
- c. Anything wrong with a train, or
- d. Any unusual circumstances likely to interfere with the safe running of the trains, or the safety of the public, shall take immediate steps to prevent accidents and where necessary advise the nearest SM by the quickest possible means.
- e. In the case of train parting he shall not show a stop hand signal but try to attract the attention of the driver or guard by shouting or gesticulating or other means.

Q. (6) :- What are the duties of Loco Pilot in case of bad riding?

- Ans :-**
1. The loco pilot shall note the exact Km. at which bad riding has occurred
 2. He shall while approaching the first block station, whistle frequently and bring his train to a stop in front of station building or the cabin where block instrument is located.
 3. Handover a written memo to the Station Master or the Switchman, as the case may be specifying the exact location and the nature of defect noticed.
 4. On a single line section, the loco pilot shall not surrender the 'Tangible Authority', if any, till such time he has issued the message to the Station Master/ Cabin man.
 5. He shall also make a report of the occurrence to the Shed/ Loco/ Traction Foreman on return to HD. Qrs.

Q. (7) :- What are the duties of a Guard in case of bad riding?

Ans :- In case of bad riding the Guard shall take the following action:-

1. The Guard shall note down the exact KM. at which bad riding has occurred.
2. He will stop the train at the next station/block cabin by dropping air pressure and report the matter in writing to the Station Master or Switch man.
3. If it is not so serious, he will report it, in writing to the Station Master of the next stopping station.

Q. (8) :- What are the duties of a Station Master and Switchman in case of bad riding?

Ans :- In case of bad riding the Station Master and Switchman shall take the following actions:-

1. The Switchman receiving such message from the LP/Gd, shall immediately inform the SM and shall not close the block section till such time, he receives confirmation from the SM supported by P.NO. that necessary precautions has been taken to ensure the safety of subsequent trains.
2. The SM receiving such report from the SWM, LP or GD, shall immediately convey the particulars to the SCR and to the SM of the station in the rear.
3. He shall then communicate the full particulars to the JE/SSE (P.Way) concerned, if headquartered at the same station, or to the Station Master of the station where the concerned JE/SSE (P.Way) is headquartered.
4. Full particulars of the report should also be sent to the all concerned officials.
5. S.M. receiving the memo before sending any train in the affected section should ensure that it is accompanied by an Engineering official not below the rank of J.E(P.Way) who will pilot the train at the location as mentioned in the caution order.
6. The engineering official shall stop the train short of the affected location, inspect the track and issue/do not issue necessary certificate for the affected location with speed restriction as considered necessary by him for safe movement of trains.
7. The engineering official shall give a written memo to the Station Master on arrival at the next station indicating the speed at which the subsequent trains can run. SM shall accordingly issue caution orders to drivers of subsequent trains.
8. In the absence of engineering official, the first train shall be allowed with C/O instructing the LP to stop dead before the affected KM. and after satisfying himself about the condition of the track shall pass with a speed not exceeding 10 Kmph or if he finds that the line is unsafe to pass, stop dead at site and inform nearby SM to send engineering official to attend and certify.
9. If the LP is not able to detect anything doubtful, subsequent trains may be allowed with speed restriction of 10 Kmph till the track is certified fit by engineering official.

Q. (9) :- What action shall be taken by the station staff and train staff during Cyclonic Weather?

Ans :- If the anemometer is indicating the critical limit of wind velocity of 39 knots (72 kmph) –

- (i) The SM. shall immediately inform the SCR & the SM at the other end of the section to control the train movement.
- (ii) The SM in consultation with the GD and the LP of the train, detain the train until the storm abates and it is considered safe.
- (iii) The station and train staff shall see that doors and windows of the coaches are kept open by the passengers to allow free passage of wind through the coaches.
- (iv) If a train caught on the run in a cyclone, storm or strong wind of an

intensity which in the opinion of the driver is likely to endanger the safety of the train, he shall immediately stop the train at the first convenient place other than the places like curve, bridges, high embankments etc.

- (v) He shall restart the train, in consultation with the guard only after the cyclone, storm or strong wind abates and it is considered safe for the train to proceed.
- (vi) (vii) The SM shall neither allow the movement of trains from his station nor give line clear to the adjacent stations.
- (vii) He shall resume normal running of train in consultation with the SCR and the SM of the adjacent stations after the wind velocity comes down below the danger level.

Q. (10):- Write down the rules for reception of a train on an obstructed line?

1. The SM. shall inform the SM. of the rear station to issue suitable caution order to the LP & GD that their train will be admitted on obstructed line.
2. Ensure that all the signals for reception of the train are kept at 'ON' position.
3. Ensure that all the points are correctly set and the facing points are locked for the reception of the train on blocked line.
4. The train shall be stopped at the FSS and shall be admitted by any of the following manner:-
 - a. By taking 'off' the calling-on signal, if provided. or
 - b. By authorising the LP supported by a P. No. over signal post telephone, where provided. or
 - c. By issuing a written authority on T/509 through a competent railway servant who shall pilot the train.
5. The train shall be stopped at the facing point leading to the reception line until hand signalled by a competent railway servant.
6. A stop hand signal shall be shown by the SM/CASM personally at a distance of not less than 45 mtrs. from the point of obstruction to indicate to the LP to stop the train.

Q. (11) Write down the rules for reception of a train on a non signalled line?

1. If it becomes necessary to receive a train on a non signalled line, the SM shall inform the SM of the rear station to issue suitable caution order to the LP & GD that their train will be admitted on non signalled line.
2. The SM shall ensure that the train has been stopped at the FSS.
3. The line on which the train is to be received is clear upto the trailing points or the place at which the train is required to come to stop.
4. All the points are correctly set and the facing points are locked for the reception of the train on the non signalled line.
5. The train shall be piloted in by a competent railway servant on a written authority (T/509).
6. The LP, while entering a non signalled line shall proceed cautiously and be prepared to stop short of any obstruction.
7. The above procedure shall also be applicable for admission of a train which has stopped after passing the reception stop signal of a station due to any reason.

Q. (12) Write down the rules for departure of a train from a non signalled line?

1. All the points are correctly set and the facing points locked for the departure of the train from the non signalled line.
2. The LP shall be given a written permission to start on form no. T/511.
3. When a tangible authority to proceed is given, T/511 shall not be issued and if more than one train are waiting for the same direction, T/511 along with the tangible authority to proceed shall be given to start a train.
4. This rule shall also be applicable for dispatching of a train which is standing/has stopped after passing the departure stop signals of a station other than the LSS due to any reason.

Q. (13) Write down the rules for departure of a train from a line provided with a common departure signal?

1. When a common departure signal is provided for a group of lines, the LP shall be given a written authority 'T/512' to start the train, in addition to the authority to proceed under the system of working.
2. The written permission and the authority to proceed shall be given only after all the points for the departure of the train have been set and the facing points locked. Common departure signal shall then be taken 'OFF'.

Q. (14) what are the rules for securing of vehicles on a running line at a station?

Immediately on arrival of a train or when a running line is blocked by a stabled load the following action shall be taken by various staff: -

1. SM/CASM/CABIN MASTER must ensure that the train/load has stopped clearing the fouling mark.
1. On double line, the points in rear shall be set against the blocked line. In case of single line, the points shall be set against the blocked line at either end.
2. Lever collars/Button collars are placed on the concerned signal/slot levers/buttons.
3. A remark in RED ink shall be made in TSR indicating the time and number of running line on which the vehicles are stabled.
4. A record shall also be made in the SMs diary.
5. At station, where end cabins are provided, P. No. shall be exchanged between the SM and the cabin staff.
6. When the engine of a train is detached or continue to remain on load in shut down condition, the following precautionary measures shall be taken to prevent rolling down:-
 - a) SM shall ensure that the hand brake of at least 6 vehicles at each end of the rake is applied. If the number of vehicles is 12 or less, the hand brake of all the vehicles shall be effectively applied. It should be done by the incoming ALP at the engine end & incoming Guard at the Brake van/Match Truck end.
 - b) The train crew and the guard shall personally ensure this and certify jointly in a written memo for having done the same before they leave the train.
 - c) Atleast 04 Skid/Wooden wedges shall be used two each below the outermost pair of wheels at either end of to secure the vehicles or load by station staff.

- d) If the train/rake is likely to remain stabled for more than 3 hours, the station staff under the supervision of SM/ASM/YM/AYM, shall tie two safety chains at each end and padlock it.
- e) The hand brakes shall be fully tightened.
- f) Coaching stock not fitted with hand brakes, shall be secured by wedges/sprags and safety chains.
- g) Care must be taken to remove the chains, sprags, wedges and skids before wagons are moved or coupled to trains.

Q. (15) what are the rules for controlling the movement of shunting?

1. Shunting operations shall be controlled by fixed signals, hand signals or verbal directions.
2. The speed during shunting operation shall not exceed 15 kmph unless otherwise authorised by special instructions.
3. Fixed signals, such as Starters (if it is not the LSS), Calling-on and Shunt signal can be used for control of shunting.
4. Shunting permitted indicator shall also used to perform shunting in the non interlocked area of Yard where the interlocked area is isolated.
5. Fixed stop signal, such as Outer, Home and the LSS shall not be taken 'Off' for shunting purpose.
6. At stations where shunt movements are not controlled by fixed signals, shunting authority (T/806) shall be issued to the LP through the shunting supervisor.
7. The LP shall retain the shunting authority till shunting is completed or withdrawn in case of reception of a train on the adjacent line which is not isolated. After completion of shunting, T/806 shall be withdrawn, cancelled and pasted in the record foil.
8. When an engine with or without vehicle is to be attached to a passenger train or while attaching train engine, the engine must first come to a dead stop at least 20 mtrs. away from the train and then shall come on to the train with great caution.
9. Responsibility for the supervision of shunting of passenger train shall devolve on any official not below the rank of shunting jamadar.
10. When any running line of a station is occupied by a passenger train, no engine shall be allowed except the train engine or banking engine or shunting engine required to perform shunting on the formation.
11. Fixed signals shall not be taken 'Off' to allow shunt movement of an engine unless the line upto the next fixed signal which is in the 'ON' position is clear. In case of any doubt or when the line is not clear, the engine shall be accompanied and hand signalled by the shunting supervisor.

Q. (16) what precautions to be observed during shunting?

The following precautions to be observed during shunting:-

- a) During shunting operation, all the facing points for the intended route shall be correctly set and locked by any of the following means:-
 - i). By pulling the lock levers,
 - ii). By key locking,
 - iii). By clamping and padlocking,
 - iv). By padlocking the through bolt.
- b) At roadside station, the guard shall be responsible for correct setting and locking of facing points.

- c) When an engine with or without vehicle is to be attached to a passenger train or while attaching train engine, the engine must first come to a dead stop at least 20 mtrs. away from the train and then shall come on to the train with great caution.
- d) When any running line of a station is occupied by a passenger train, no engine shall be allowed except the train engine or banking engine or shunting engine required to perform shunting on the formation.
- e) Fixed signals shall not be taken 'Off' to allow shunt movement of an engine unless the line upto the next fixed signal which is in the 'ON' position is clear. In case of any doubt or when the line is not clear, the engine shall be accompanied and hand signalled by the shunting supervisor.
- f) The speed during shunting operation shall not exceed 15 kmph unless otherwise authorised by special instructions.
- g) When shunting is to be performed on a through goods train, effective hand brakes of at least 15% wagons of the train not involved in shunting operation shall be pinned down or applied.
- h) During the shunting operation, the fixed signals controlling the reception & despatch of train shall be kept at 'ON'.
- i)

Q. (17) What are the circumstances in which a signal shall be treated as defective?

Signal shall be treated as defective in the following circumstances:

- 1. When a signal cannot be taken 'off.'
- 2. When a signal cannot be put back to on position.
- 3. When a semaphore arm type signal is in drooping condition.
- 4. When the aspect of the signal does not correspond with the position of controlling lever/ button/ switch.
- 5. If a colour light signal does not show any light or shows a white light in place of colour light.
- 6. If the roundel of a signal is found cracked or in broken condition
- 7. When a point become defective, the signal protecting the point shall be treated as defective.
- 8. If the track circuit/axle counter for a line becomes defective the concerned signal shall be treated as defective.
- 9. When the electric repeater for a signal becomes defective the signal shall be treated as defective.
- 10. If a Warner signal below a stop signal becomes defective in off condition then the stop signal shall also be treated as defective.
- 11. When the home signal is defective, the outer shall also be treated as defective.
- 12. If the co-acting signal is defective, the main signal shall also be treated as defective.
- 13. If the aspect of signal is conflicting/misleading.
- 14. If more than one aspect is displayed, the signal shall be treated as defective.
- 15. If a signal is not relevant to the operation comes off while taking off a signal, both the signals shall be treated as defective.
- 16. If the signal light of a colour light signal is found BOBBING OR FLICKERING, the signal shall be treated as defective.

Q. (18) What are the duties of SM. When a signal become defective?

1. As soon as the SM comes to know that the signal has got defective he shall:-
2. Try to keep the signal in 'ON' position if it is not in that position –
3. If the signal can not be kept in 'ON' position, a competent Railway Servant shall be deputed with danger hand signal and detonator 90 M. outside it, provided it is a stop signal except ROUTING, STARTER & ADVANCED STARTER signal, to protect the signal.
4. During night the green glass of the signal shall be broken.
5. Information shall be given either in writing or by Telephone to all concerned officials about the defect.
6. The SM shall make necessary entries in the Signal failure Register, Train Signal Register, Station Master Diary and Caution Order Register.
7. The train shall be passed by observing the relevant rules and procedures till the normal working of Signal is resumed.

Q. (19):- How the trains will be worked when reception stop Signal is defective?

SM shall advise the station in rear regarding the defect.

1. The SM in rear receiving the advice of the defective signal shall immediately acknowledge it and issue caution order accordingly.
2. The SM, where the signal has become defective shall before authorizing a train to pass the defective signal, ensure that the conditions for taking "off" that signal has been fulfilled he shall then authorize the driver to pass the defective signal at 'on' in one of the following manners.
3. By taking 'off' calling on signal.
4. By authorizing the driver over signal post Telephone, supported by Private No.
5. By issuing T/ 369 (1), where applicable.
6. By issuing T/ 369 (3b)

Q. (20) How the trains will be worked when Warner/Distant Signals is defective in "off" position?

1. Warner signal on an independent post or a distant signal is out of order and cannot be kept in the 'on' position a stop hand signal shall be shown at the foot of the signal.
2. Advice of the defective signal shall be given to the Drivers of trains at the station in rear warning them to stop at such signal.
3. At night, the light of the signal shall be extinguished and the train shall be stopped and hand Signalled past.
4. Warner signal placed below a stop signal becomes defective and cannot be kept in the 'on' position the stop signal above it shall also be treated as defective.
5. If the Warner or distant signal of an intermediate block post is defective in 'off' position, the IBSS shall also be treated as defective.

Q.(21) How the trains will be worked when points and crossing are damaged?

1. Whenever points, Crossings or guard rails are defective or damaged, the railway servant in-charge of operation of points shall protect them and immediately report the matter to the SM.

2. The SM on duty shall Inform the matter to the station in rear, notice station, JE/SSE(P.WAY& SIG.), ADEN & DEN, signal maintainer, ASTE, DSTE, DOM, DTI & SCR.
3. The SM shall arrange to ensure the safe passage of trains.
4. Keep the concerned signal at 'on' until the defect is rectified.
5. If interlocked points go out of order no train or vehicle is allowed to pass over them until-
 - a. The defect has been rectified; or
 - b. The points have been secured by a clamp or a through bolt and padlocked.
6. The speed shall not exceed 15 kmph over the defective points
7. A caution order shall be given to the LP & Guard from station in rear or notice station.
8. As soon as repairs are completed and points are tested and found in working order, all concerned shall be notified.
9. When motor operated points become defective, trains may be received or dispatched, only after clamping & padlocking both the facing & trailing points.

Q. (22):- What are the procedure and precautions to be taken while issuing Disconnection and Re-connection notice?

When it is necessary to do work in connection with the repairing, renewing overhauling or installing signals and gears; either interlocked or non-interlocked the official in charge of signal department shall prepare and hand over the "Disconnection Notice" on form T / 351.

1. The SM shall not give his signature, if signals have already been taken off for reception, dispatch of a train until the said train has arrived /passed clear of the signals and points.
2. The SM shall immediately after signing the record fail of Disconnection Notice make an entry in the Caution order Register, TSR, and station master's diary in Red ink.
3. The Disconnection Notice to be kept in a separate register specially maintained for the purpose.
4. The station master shall inform the cabin man on duty at either end of station.
5. Giving details of the signals and / or the points which are to be repaired overhauled, renewed or in any way interfered with, supported by a private number.
6. The cabin man shall acknowledge this information supported by a private number and place lever collars on the concerned levers of the points and signals.
7. The cabin man at either end shall make an entry in remark columns of Train signalling Register in Red ink to this effect.
8. The station master shall advice the station master from the block station and notice station in rear by issuing a message supported by a private no.
9. Caution order issued to all the driver and guard that the train will be piloted in,
10. If the signals and points under repair, overhauling etc. related to the live on which the trains are required to pass. He shall obtain acknowledgment of this advice by message supported by a private no. from the block station and notice station in rear.

11. The points shall be clamped and padlocked and train will be piloted in during the period the reception signals and points are disconnected on the route on which the train is to be admitted.
12. Similar procedure shall be followed for outgoing trains if departure signals and any points on the departure route for a train are involved.
13. However, during when specific instruction are issued, overhauling of lever frame or non-interlocking at an interlocked stations signals may be taken 'OFF' for reception of trains provided the relevant points are set, clamped and padlocked for the nominated route.
14. A competent railway staff shall also be deputed to display hand signal, at the foot of the stop signal.
15. The signal staff shall mention to this effect in the T-351 and assist traffic staff in setting the point in the desired position.
16. The traffic staff shall be responsible for a clamping and padlocking.
17. On the completion of the work the official in charge of S& T civil Engineering dept. will hand over the relevant portion of the Re-connection notice/memo to the SM and obtain this signature on the record foil of the Re- connection notice.
18. The SM shall not signature the record foil of the "Disconnection notice" until he has tested the signals and points concerned and he is satisfied that they are in good working order.
19. He shall then cancel the entry in the caution order Register and make an entry in the TSR, station diary to this effect.
20. The SM shall then advice completion of the work to cabin man (where provided) and to block station and notice station in rear under a message by exchange or private no.
21. The reconnection notice/written memo handed over by the S & T / civil engineering official in charge after the completion of the work should be kept in the register specially maintained for the purpose along with the concerned Disconnection / written memo.

Q. (23):- What is signal? What are the various kinds of signal?

Ans :-"Signal" means an intelligent sign, which is used to control the movement of trains. It is of 04 kinds.

- (1). FIXED SIGNAL
- (2).HAND SIGNAL
- (3).DETONATING SIGNAL
- (4). WARNING SIGNAL

Q. (24) Write short notes on the following:-

a) WARNER SIGNAL

1. It is a permissive signal.
2. It is of either Arm type or colour light type.
3. In Arm type it has fish tailed arm, painted Red with white bar.
4. It is available in TAS & MLQ signalling arrangements.
5. It is placed on a post by itself or below the FSS or the LSS.
6. It indicates the condition of the Block section ahead.
7. It has two aspects- i. Proceed with caution. ii. Proceed.
8. It may be -a) Working Warner b) Dummy Warner
9. Colour Light Warner signal is distinguished by 'P' marker.

b) DISTANT SIGNAL

1. It is a permissive signal.
2. It is of either Arm type or colour light type.
3. In Arm type it is a fish tailed arm painted yellow with black bar.
4. In colour light type it is provided with 'P' marker
5. It is available in MLQ & MOMA signalling arrangements.
6. It is always placed on a single post only.
7. It is placed at an adequate distance in rear of the stop signal to which it refers.
8. A colour light Distant signal may be combined with the GSS or LSS or IBSS under approved special instructions.
9. If Distant is combined P Marker shall not be provided.
10. It has the following aspects- i. Caution ii. Attention iii. Proceed
11. More than one Distant signal may be provided, the first one is the Distant signal & other is Inner Distant signal.
12. When Inner distant is provided the Distant signal will show either Attention or Proceed.

Sequence of signals in case of Single Distant

Cases	Distant	Home	Starter	Adv. Starter
Home Stoppage	Y	R	R	R
Loop Line Stoppage	YY	Y (With Lunar)	R	R
Loop Line Through	YY	Y (With Lunar)	Y	G
Main Line Stoppage	YY	Y	R	R
Main Line Through	G	G	G	G

Sequence of signals in case of Double Distant

Cases	Distant	Inner Distant	Home	Starter	Adv. Starter
Home Stoppage	YY	Y	R	R	R
Loop Line Stoppage	YY	YY	Y (With Lunar)	R	R
Loop Line Through	YY	YY	Y (With Lunar)	Y	G
Main Line Stoppage	G	YY	Y	R	R
Main Line Through	G	G	G	G	G

c) OUTER SIGNAL

1. It is the first stop signal of a station.
2. It is located at an adequate distance (400 m. minimum) outside the point.
3. It is available at class 'B' station in two aspects signalling only.

4. It demarcates the commencement of station limit.
5. It cannot be taken 'OFF' for shunting purpose.
6. It is never pre-warned by any fixed signal.
7. It is either arm type or colour light type.

d) HOME SIGNAL

1. The home signal is the FSS of a station at which an outer signal is not provided.
2. The home signal is the second stop signal of a station at which an outer signal is provided.
3. It is located at an adequate distance outside the point up to which the line may be obstructed even after granting line clear.
4. Home signal is either arm type or colour light type.
5. Home signal is located outside all connections on the line to which it refers.
6. At 'C' class station, it is the FSS as well as the LSS of the station.
7. It is always pre-warned by a fixed signal.
8. It shall not be taken 'OFF' for shunting purpose.

e) ROUTING SIGNAL

1. The routing signal is an approach stop signal.
2. It is used to indicate to a driver which of two or more diverging routes is set for him when the home signal is in consequence of its position, inconvenient for this purpose.
3. It is provided inside the Home signal.
4. It protects all the points of the lines to which it refers.
5. It is generally provided at big junction stations.

f) STARTER SIGNAL

1. It is a departure stop signal.
2. Where advance starter is not provided it is the LSS.
3. It is essentially provided at 'A' class & 'B' class (D/L).
4. Starter signal is either arm type or colour light type.
5. Normally it protects facing point or fouling mark of the line concerned.
6. When only one starter is provided for a group of lines then it is called common starter.

g) ADVANCED STARTER SIGNAL

1. It is a departure stop signal.
2. It is the LSS of a station.
3. It controls the entry of a train into the next block section.
4. It is either arm type or colour light type.
5. It is located outside of all connections.
6. It shall not be taken 'OFF' for shunting purpose.

h) CALLING-ON SIGNAL

1. It is a subsidiary signal.
2. It is either arm type or colour light type.
3. It is always provided below a stop signal except the LSS.
4. It is either arm type or colour light type.
5. It has no independent aspect in 'ON' position.
6. It is taken 'OFF' for- shunting purpose, admission of train on blocked line and to receive or despatch a train, if the stop signal is defective.

7. Colour light type calling-on signal is distinguished by 'C' marker.
8. Colour light type calling-on signal shows miniature yellow light in 'OFF' position.

i) SHUNT SIGNAL

1. It is a subsidiary signal.
2. It is of three types:-
 - a. Position light type.
 - b. Disc Type a white disc with a red bar across it.
 - c. Under Special Instruction, Miniature Arm Type.
3. It may be provided –
 - a. On an independent post; or
 - b. Below a stop signal except the FSS.
4. More than one shunt signal may be provided on a post.
5. When more than one shunt signal is provided on a post, then the topmost signal will apply to the extreme left line and second from top to the second from the left line and so on.
6. It has no independent aspect in 'ON' position when provided below a stop signal.
7. It is used to control shunting movement. In case Shunt signals are not provided, hand signals may be used for shunting.

j) REPEATING SIGNAL

1. It is a subsidiary signal.
2. It is of three types:- a. Colour light type. b. Arm type. c. Banner type.
3. It is distinguished by 'R' marker or 'R' marker light.
4. It is provided in rear of the stop signal to which it refers.
5. It tells the LP whether the signal ahead is 'ON' or 'OFF'.
6. In 'ON' position it shows yellow light and in 'OFF' position it shows green light.

k) CO-ACTING SIGNAL

1. It is a subsidiary signal.
2. It is also called duplicate signal.
3. It is provided below the main signal.
4. It is similar to the main signal in every aspect.
5. It may be of Light type or Arm type.
6. Both the signals are operated with the same lever.
7. If any signal is defective, both are treated as defective.

l) IBSS (Intermediate Block Stop Signal)

1. It is a home signal provided at an IBP.
2. It is distinguished by 'IB' marker.
3. It is remotely controlled from the block station in rear.
4. It can't be taken 'OFF' unless line clear has been taken from the block station in advance through block instrument.
5. It is the FSS/LSS of the IBP.
6. It is provided in single line, double line & multiple line in absolute block section.

m) GATE STOP SIGNAL

1. It is provided to protect the L/C gate.
2. Generally 'G' marker is provided on signal post.

3. In TAS it is placed at least 400 m. & in MLQ/MAS at least 180 m. in rear of L/C gate.
4. It is pre-warned by a permissive signal as per signalling arrangement of the station ahead.
5. The LP can pass it at 'ON' without any written authority.

n) HAND SIGNAL

1. It is one, out of the four types of the signal.
2. During day hand signal flags (Red/Green) and during night hand signal lamp is used as hand signal.
3. Red flag should be kept in right hand and green flag in left hand for use.
4. Hand signals are used in exchanging signal, amongst the train passing staff, shunting operation etc.
5. In lieu of hand signal flag bare hand is used during shunting.

o) WARNING SIGNAL

1. It is one, out of the four types of the signal.
2. The signals to be used to warn the incoming train of an obstruction.
3. During day red flag and during night flashing red hand signal lamp is used as warning signal.
4. It is shown during protection of obstruction in the block section.
5. It is generally used by Guard, LP, Patrolman, gateman etc.
6. When a LP notices a warning signal he will stop the train for one minute by day and two minutes by night.
7. If no further details for showing the warning signal are noticed, he will proceed cautiously up to the next block station.

p) DETONATOR

1. It is an audible signal.
2. It is also known as fog signal.
3. It is used to protect the obstruction in the block section or to indicate the location of the FSS of a station.
4. The life of detonators is 5 years (Manufactured during 2010 and onwards) & 7 years of those manufactured before 2009.
5. The safety radius of detonator is 45 m.
6. It is to be tested once in a year and the speed while testing is 8 -12 kmph.

q) FSP

1. Its full form is fog signal post.
2. It is provided for the use of fog signalman to place the detonator during foggy weather.
3. It is located at a distance of 270 m. in rear of the FSS.
4. It is painted black and white alternately.
5. It is not provided in automatic signalling territory and in the section where double distant signals are provided.

r) VTO

1. It means visibility test object.
2. It is mentioned in the SWR, where provided.
3. It is provided at a distance of 180 m in multiple aspect signalling area and 300-350m in case of two aspect signalling area, in either side of the station.
4. It is used to test the visibility condition by the SM. during foggy weather.

5. It may be-
 - A post erected for the purpose and lighted at night; or
 - The arm by day and the light /back light by night; or
 - The light of a fixed CLS both by day and night.
6. If it is not visible, the SM will send the fog signalman to place the detonators.

s) FOG SIGNAL REGISTER

1. It is an important register which is maintained at a station where detonators are placed during foggy weather.
2. Its prescribed form no. is OP/T 124.
3. It has four parts-
 - PART-I :- Particulars of fog signalmen.
 - PART-II :- Particulars of receipts and stock of detonators.
 - PART-III:- Period of fog, fog signalmen on duty.
 - PART-IV:- Particulars of issue and testing of detonators.
4. SM in-charge should take acknowledgement from the fog signalmen in the month of October every year as an assurance of their knowledge for the use of detonators.

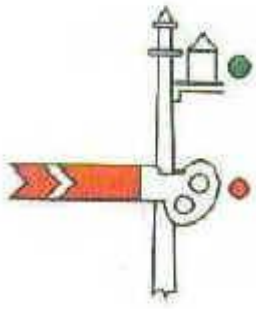
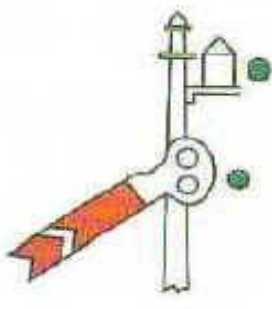
t) BACK LIGHT

1. Every semaphore or Disc type signal, the light which can be seen from the place of SM office, at which signal is worked, shall be provided with a back light to indicate whether the signal light is burning or not.
2. Back light of the signal shall show a small white light when signal is "ON" aspect and no light when in any other position.
3. Any fixed light used in conjunction with semaphore signal shall show a back light.
4. Back lights may not be provided when alternative arrangements are made at the place from SM office, at which such signal is worked to indicate whether single lights are burning or not.

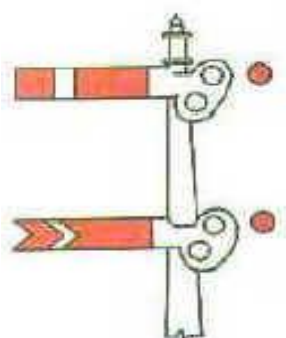
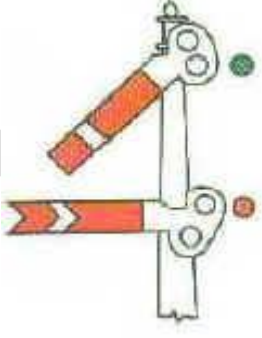
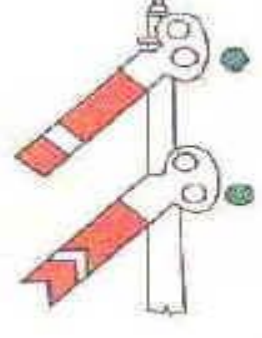
ASPECT AND INDICATION CHART OF DIFFERENT SIGNALS

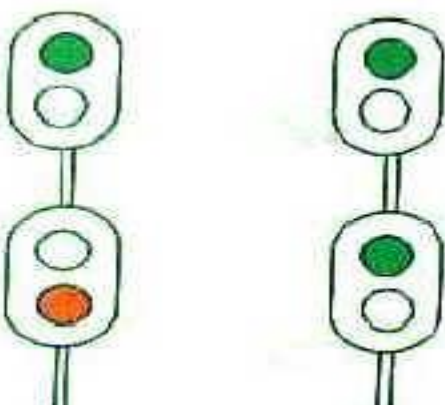
1. WARNER SIGNAL:

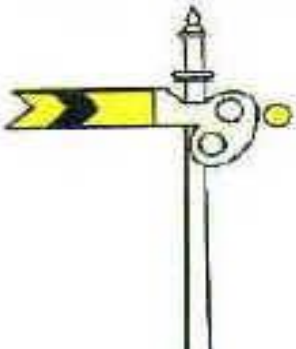
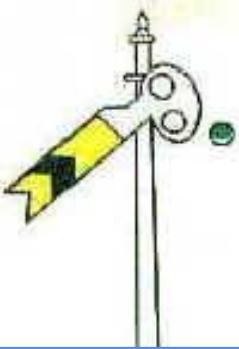
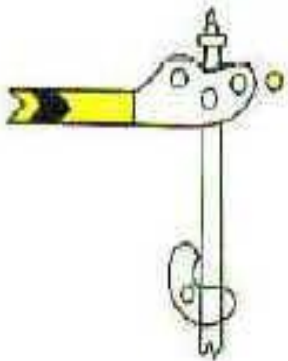
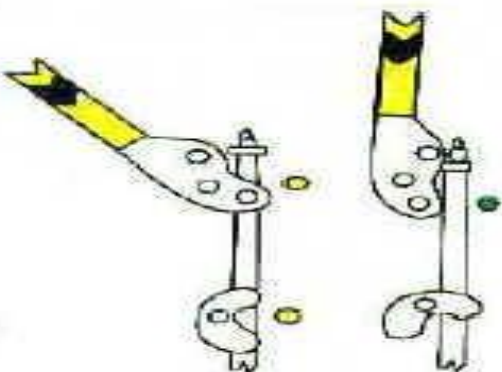
(a) Semaphore Warner signal in Two-Aspect Signalling Territory-on a post by itself :

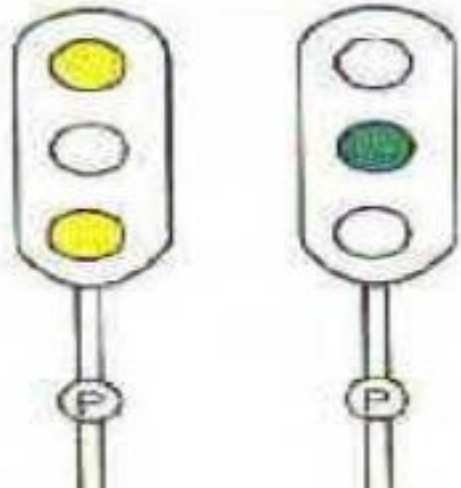
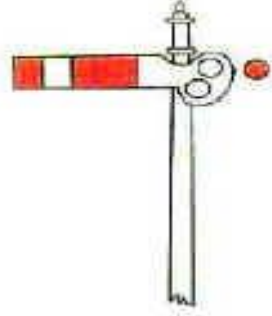
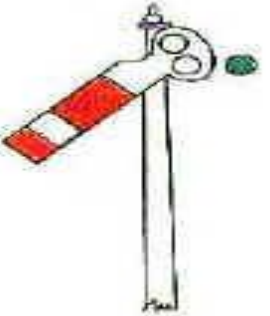
			
	“ON” Position	“OFF” Position	
Aspect:	Proceed with caution	Proceed	
Indication:	Proceed with caution and be prepared to stop at the next Stop signal.	Proceed	

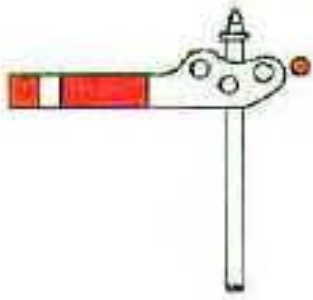
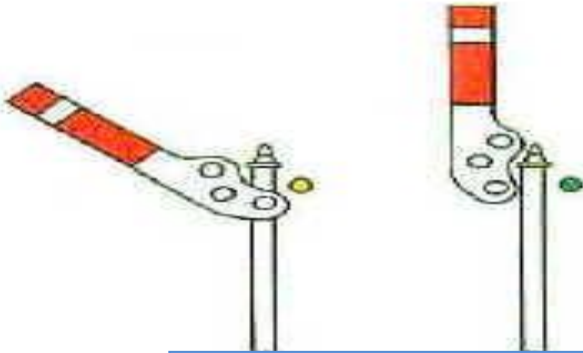
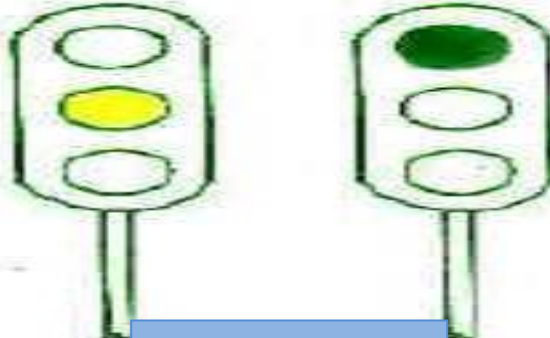
(b) Semaphore Warner signal in Two-Aspect Signalling Territory-below a Stop signal :

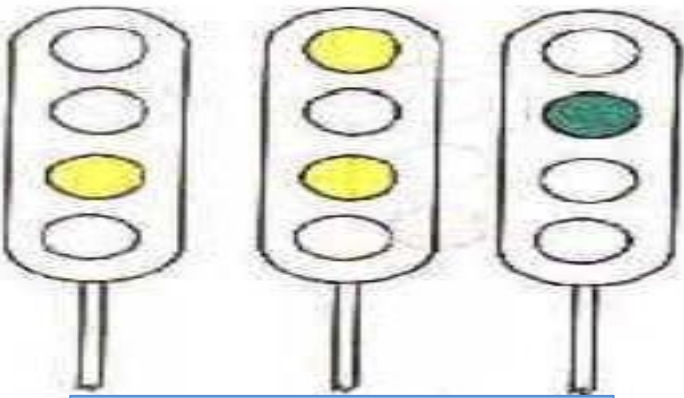
			
	“ON” Position	“OFF” Position	“OFF” Position
Aspect:	Stop	Proceed with caution	Proceed
Indication:	Stop dead	Proceed with caution and be prepared to stop at the next stop signal.	Proceed

(c) Colour light Warner signal in Two-Aspect Signalling Territory-on a post by itself :			
	 <p>“ON” Position</p>	 <p>“OFF” Position</p>	
Aspect:	Proceed with caution	Proceed	
Indication:	Proceed with caution and be prepared to stop at the next Stop signal.	Proceed	
(d) Colour Light Warner signal in Two-Aspect Signalling Territory-below a Stop signal :			
	 <p>“ON” Position</p>	 <p>“OFF” Position</p>	
Aspect:	Stop	Proceed with caution	Proceed
Indication:	Stop dead	Proceed with caution and be prepared to stop at the next stop signal.	Proceed

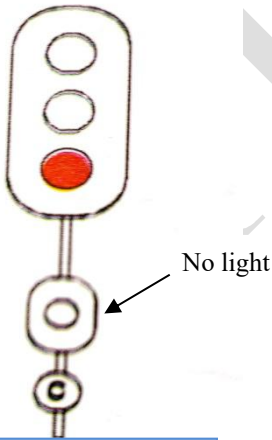
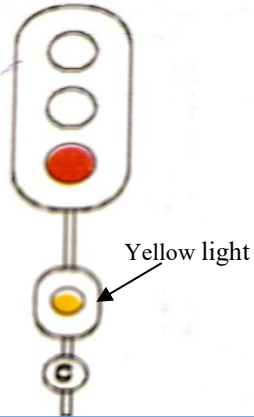
2. DISTANT SIGNAL			
(a) Semaphore Distant signal in Two-Aspect Signalling Territory :			
	 <p>“ON” Position</p>	 <p>“OFF” Position</p>	
Aspect:	Caution	Proceed	
Indication:	Proceed and be prepared to stop at next stop signal	Proceed	
(b) Semaphore Distant signal in Multiple-Aspect Signalling Territory:			
	 <p>“ON” Position</p>	 <p>“OFF” Position</p>	
Aspect:	Caution	Attention	Proceed
Indication:	Proceed and be prepared to stop at the next stop signal	Proceed and be prepared to pass next signal at such restricted speed as may be prescribed by special instructions. Train is being received either on Main Line and is required to stop at the starter signal or on a loop line required to stop at the starter signal or to pass run through via Loop line.	Proceed, Block section ahead is clear. Train is to pass run through the station via Main Line.

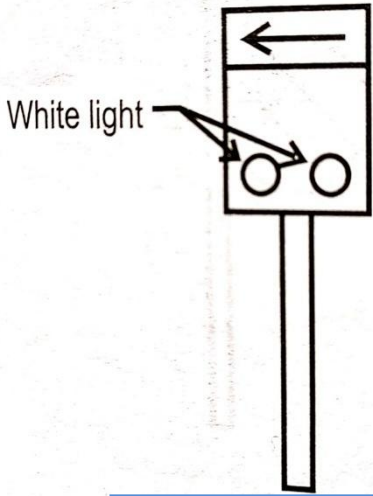
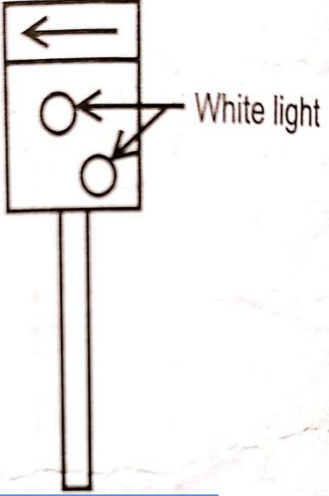
(c) Colour light Distant signal in Multiple-Aspect Signalling Territory:			
	 <p>“ON” Position</p>	 <p>“OFF” Position</p>	
Aspect:	Caution	Attention	Proceed
Indication:	Proceed and be prepared to stop at the next stop signal	Proceed and be prepared to pass next signal at such restricted speed as may be prescribed by special instructions. Train is being received either on Main Line and is required to stop at the starter signal or on a loop line required to stop at the starter signal or to pass run through via Loop line.	Proceed, Block section ahead is clear. Train is to pass run through the station via Main Line.
3. STOP SIGNAL			
(a) Semaphore Stop signal in Two-Aspect Signalling Territory			
	 <p>“ON” Position</p>	 <p>“OFF” Position</p>	
Aspect:	Stop	Proceed	
Indication:	Stop dead	Proceed	

(b) Semaphore Stop signal in Multiple-Aspect Signalling Territory			
	 “ON” Position	 “OFF” Position	
Aspect:	Stop	Caution	Proceed
Indication:	Stop dead	Proceed and be prepared to stop at next Stop signal	Proceed
(c) Colour light Stop signal in Two-Aspect Signalling Territory			
	 “ON” Position	 “OFF” Position	
Aspect:	Stop	Proceed	
Indication:	Stop dead	Proceed	
(d) Colour light Stop signal in Multiple Three-Aspect Signalling Territory			
	 “ON” Position	 “OFF” Position	
Aspect:	Stop	Caution	Proceed
Indication:	Stop dead	Proceed and be prepared to stop at next Stop signal	Proceed

(e) Colour light Stop signal in Multiple Four-Aspect Signalling Territory				
		 <div style="text-align: center; background-color: #4a86e8; color: white; padding: 5px; margin-top: 10px;">“OFF” Position</div>		
Aspect:	Stop	Caution	Attention	Proceed
Indication:	Stop dead	Proceed and be prepared to stop at the next stop signal	Proceed and be prepared to pass next signal at such restricted as may be prescribed by special instructions.	Proceed

4. Subsidiary Signals

Colour light type Calling-on signal in Multiple Aspect Signalling Territory:				
	 <div style="text-align: center; background-color: #4a86e8; color: white; padding: 5px; margin-top: 10px;">“ON” Position</div>	 <div style="text-align: center; background-color: #4a86e8; color: white; padding: 5px; margin-top: 10px;">“OFF” Position</div>		
Aspect:	Loco Pilot shall obey the aspect of the Stop Signal		Proceed slow	
Indication:			Stop and then draw ahead with caution and be prepared to stop short of any obstruction	

Position Light type 'Shunt Signal' in Two Aspect or Multiple Aspect Signalling Territory:			
	 <p>White light</p> <p>"ON" Position</p>	 <p>White light</p> <p>"OFF" Position</p>	
Aspect:	Stop	Proceed slow	
Indication:	Stop Dead	Proceed with caution for shunting	
Colour light type Repeating Signal:			
	 <p>"ON" Position</p>	 <p>"OFF" Position</p>	
Aspect:	Signal "ON"	Signal "OFF"	
Indication:	Signal which it repeats is at "ON"	Signal which it repeats is "OFF"	

**Minimum Signalling arrangement at different class and type of stations
(GR.3.27, 3.28, 3.29):-**

Class of stations स्टेशन का वर्ग	Two aspect Signalling द्विसंकेती सिगनलिंग व्यवस्था	Modified Lower Quadrant signaling मॉडीफाईड लोअरक्वाड्रेंट सिगनलिंग व्यवस्था	Multiple Aspect signaling बहुसंकेती सिगनलिंग व्यवस्था
'A' Class "ए" श्रेणी	Warner, Home, starter वॉर्नर, होम, स्टार्टर		
'B' Class "बी" श्रेणी	Single Line - Outer, Home इकहरी लाईन-आउटर, होम	Distant, Home, Warner below main Home, Starter डिस्टैंट, होम, मेन होम के नीचे वॉर्नर, स्टार्टर	Distant, Home, Starter डिस्टैंट, होम, स्टार्टर
	Double line: Outer Home, Starter दोहरी लाईन – आउटर, होम, स्टार्टर On both on single line and double line a Warner shall be provided in accordance with Rule 3.06. If trains run through at speed exceeding 50kmph without stopping.		
'C' Class "सी" श्रेणी	Warner, Home वॉर्नर, होम	Distant, Home डिस्टैंट, होम	Distant, Home डिस्टैंट, होम

Q.(25) :- What are the conditions for taking 'OFF' Home signal?

Ans :- Home signal can not be taken 'OFF' unless-

1. The line on which the train is to be received is clear of all obstructions.
2. All facing & trailing points have been correctly set and all facing points have been locked. In panel lock indication of concerned facing point and route is lit for taking off concerned home signal.
3. Level crossing gate if any to be closed & lock against road traffic.
4. Shunting on the adjacent line which is not isolated should be stopped & authority will be withdrawn.
5. All the points giving access to the intended line shall be isolated.
6. On double line, the line shall be kept clear for an adequate distance beyond Starter.
7. On single line, the line shall be kept clear for an adequate distance beyond the outermost trailing point or the place at which the train will stop.
8. Line clear has been obtained from the block station in advance at 'C' class station.

Q.(26):- Why signals are necessary?

Ans :-

1. The signalling system is indispensable for the railways as the safe and efficient working of trains depends to a very large extent on this system.
2. The peculiarity of railway which necessitates the provision of signals and also distinguishes this mode of transport from other modes is the fixed and rigid track.
3. In case of road traffic, although the density and variety of traffic are greater than on the railways, yet signalling system is not a must.

4. The reason is that the collisions can be avoided by altering the direction and getting aside in order to allow the other vehicles to pass.
5. The path of road traffic is not rigid but on the railways the track is fixed and the drivers have no option and no means to change the direction.
6. Collisions can only be avoided by stopping, but even that is not possible due to the long loads, heavy weights and high speed of trains.
7. Further, where there is a choice of tracks, it does not rest with the driver, but with the Station Master.
8. On the railways, therefore, the driver cannot be wholly responsible for the safety as the case is in other modes of transport.
9. Since the trains cannot cross between the stations and the drivers have no means to ensure the clearance of track on which they have to proceed therefore an outside factor has to be introduced, who shall ensure the clearance of track from obstructions, before permitting the drivers to proceed to the other station.
10. The outside factor so introduced is the Station Master who communicates his directions to the driver and also fulfils his responsibility in ensuring safety through the agency of signals.
11. The signalling system establishes harmony between the train and the track.

Q.(27):- What are the basic principles of signalling?

Ans :- Every fixed signal shall be so constructed that, in case of failure of any part of its connections, it shall remain at, or return to its most restrictive aspect.

In other words it can be said that-

- (a) The fixed signal which is at "ON" position, shall also remain at "ON" position if any failure on any part of its connection is caused and in that case the concerned fixed signal can not be taken "OFF", and
- (b) The fixed signal which is at "OFF" position shall return to its "ON" position immediately if any failure on any part of its connection is caused.

Q.(28):- What do you mean by "ODC"? How it is classified? Describe in brief about the different classes of "ODC"

Ans.:-Any consignment, when loaded upon a wagon infringes the maximum standard moving dimension, at any point, on the entire route, from booking station to the destination, including via break of gauge is called the '**Over Dimensional Consignment**'.

Classification of ODC: -

MAXIMUM MOVING DIMENSIONS

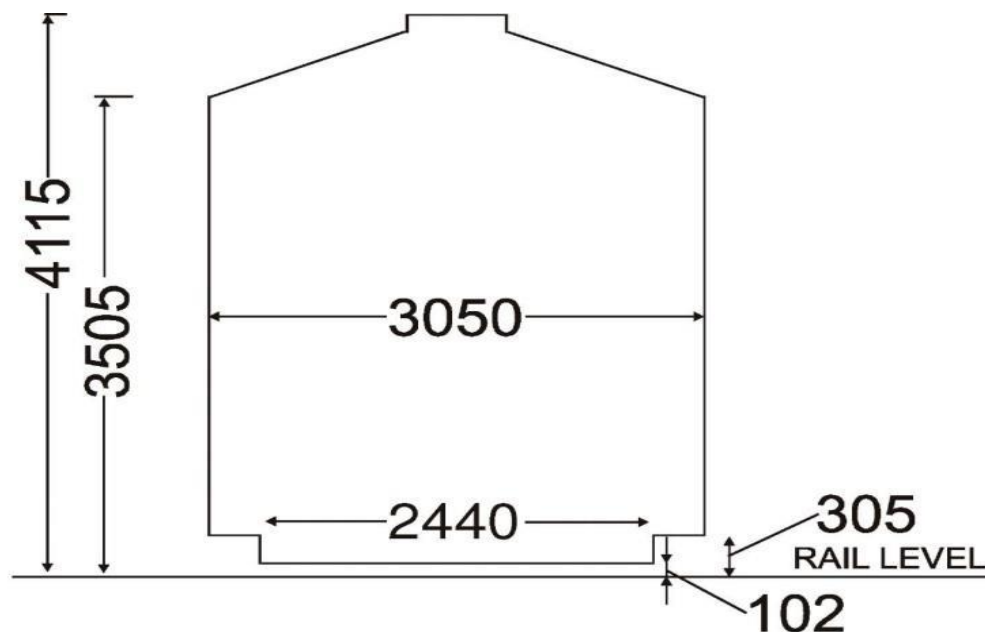
- If any package before loading exceeds the following dimensions, it is treated as an ODC.

Description	Gauge		
	BG (1.676 MM)	MG (1000 MM)	NG (762 MM)
Height at Centre	4115	3430	3200
Height at sides	3505	3200	2895
Maximum Width	3050 for Bogie Wagon 3200 for 4 wheeled Wagon	2590	2286

Note: (i) Above mentioned dimensions includes lashing and packing.

(ii) When a dummy truck is used, the maximum weight that may be loaded, in any wagon or truck is distinctly marked on each vehicle and must not be exceeded.

MAXIMUM MOVING DIMENSION (OPM 8.15 of E.Co.R.):



ALL DIMENSIONS ARE IN MM.

ODCs are divided into THREE classes according to the minimum clearance available between the consignment and minimum fixed structure profile.

Class 'A':- Those ODC loads which has a gross clearance of 22.86 cm (9 inches) & above.

Class 'B':- Those ODC loads which has a gross clearance of 15.24 cm (6 inches) and above, but less than 22.86 cm (9 inches).

Class 'C':- Those ODC loads which has a gross clearance of less than 15.24 cm (6 inches) but not less than 10.16 cm (4 inches).

CLASS	SANCTIONING AUTHORITY	MAXIMUM PERMISSIBLE SANCTIONED SPEED	MOVEMENT DURING DAY OR NIGHT	ESCORTED BY
'A'	Within Division :- DRM Inter Division of the same Zone:- COM Inter Rly:- COM of the zones concerned	Sectional speed	Day and Night	-
'B'	Local :- DRM Inter Division: - COM Foreign Rly. : - COM	40 kmph/ 15 kmph – Passing station, yard, curves, turnouts./ 8 kmph- Passing tight structure.	Day and Night	TXR
'C'	CRS	25 kmph/ 8 kmph/ stop & proceed with walking speed	Day	SE (C&W), SE(P.WAY) & TI

General instruction regarding loading & movement of ODC.

- ❖ This type of consignments must be loaded carefully and packed properly.
- ❖ This type of load shall be examined by SE/(C&W) before starting.
- ❖ This load shall be moved by through trains only and not by any work or shunting train.
- ❖ Loose and fly shunting is prohibited.
- ❖ When specified, movement of these types of load shall be avoided through loco yd., goods shed, transshipment / platform shed.
- ❖ Guard must intimate to the SCR regarding the particulars of ODC before starting of the train.
- ❖ TNC will endorse the ODC load in the wagon way bill with red ink.
- ❖ DY.Chief controller must ensure that the load is running in the authorized route.

Following particulars are mentioned on the card label :

- Sanction number & sanctioning authority
- Route and via junctions
- Weight of the consignment
- Actual overall dimension
- Classification of ODC

Permanent restrictions are to be strictly followed while ODC will be transported.

Q.(29) :- WRITE SHORT NOTES OF THE FOLLOWING:

Ans. :- ASSURANCE REGISTER :

1. All the staff, associated with train passing duties, must sign a declaration in the assurance register in token of having studied the SWR and other instructions pertaining to their duties and understood the same and they are in a position to take up duties independently at the station.
2. In case of illiterate staff, the SM in-charge/YM/SM shall personally explain the SWR and their duties and obtain their acknowledgement in the assurance register.
3. Acknowledgement is taken in Prescribed form-A (For Gr-C staff) and form-B (For Gr-D staff)
4. Fresh assurance must be obtained from the staff concerned when:
 - a) He/she joins the station as a new member.
 - b) There is any change in the SWR.
 - c) He/she resumes duty after an absence of 15 consecutive days or more.

➤ **TEMPORARY WORKING ORDER (TWO) :**

- ✓ It is a bunch of detailed instructions issued and circulated by the Sr.DOM/DOM whenever any pre-planned work of signalling, OHE or engineering department is to be done, requiring special safety precautions to be observed by staff
- ✓ Temporary Working Order shall be issued in the following cases :
 - a) When the nature of work is such, that it will require the imposition of speed restriction for more than one day.
 - b) In all the cases when addition or alteration in the layout of the yard or to permanent signalling and interlocking arrangements are to be made.
 - c) Overhauling of the signal and lever frames.
 - d) The nature of work involves temporary termination of working of the trains.

- e) For construction of all new installations on or near the track, such as new station, foot over bridge, renewal of track, etc.
- f) Any other condition which require specialised type of working over the Railway.

➤ **TRAIN SIGNAL REGISTER**

1. It is an important register kept by the SM or under his orders.
2. All the signals received or sent on the block instrument with its time shall be entered in it, immediately after acknowledgement.
3. Actual timings shall be recorded. Fraction of a minute shall be counted as one.
4. Entries shall be made in blue/black/red ink.
5. No erasure shall be made. If any entry is found to be incorrect, a line shall be drawn through it and correct entry shall be made above it.
6. The SM, who makes an entry for a train, shall continue on duty till all entries for that train are complete.
7. While change of duty a line shall be drawn right across the TSR.
8. All entries regarding blocking of running lines, block back, block forward, running of motor trollies, material trollies shall be made in RED ink.
9. Form No. of TSR is OP/T28 (Revised).
10. If any correction is made, it must be initialled by the person on duty.
11. SM in-charge shall scrutinise the TSR daily and certify its correctness by signing it. Any irregularity noticed, shall be reported to DSO.
12. It shall on no account be taken out of the block cabin/station. In case of any accident, it may be removed for safe custody by the SM in-charge or by an Inspector/Officer of the operating department after a new register has been brought into use.

➤ **PRIVATE NUMBER :**

1. It consists of two digits. It shall be allotted serially. These are not printed in consecutive order but in random series in a book.
2. DOM shall issue sufficient number of Private Number books to SM, JE/SE/SSE (P-way), CHC, JE/SE/SSE (Traction/OHE), CTPC and other officials concerned.
3. Private Numbers allotted and used for one purpose shall not be re-used for another purpose.
4. When Private Number is transmitted over phone, it shall be given and acknowledged in two different ways. When possible, it shall be given in regional language as well.
5. While using a Private Number, the figures to be scored out by drawing a diagonal line through it and the train number and/or the purpose for which it is allotted shall be entered against it.
6. In case of duplication of Private Number, after issuing the first number, the second one shall be cancelled.
7. While changing duties, a line shall be drawn horizontally below the last Private Number used by the staff relieved and initialled by both the incoming and outgoing staff.
8. At midnight a line shall be drawn in red ink horizontally below the last Private Number used on the previous day and the date being written below the horizontal line.

9. Private Number book shall be kept in the safe custody of the staff on duty during the course of his duties and shall be handed over to the staff relieving him.

➤ **IDENTIFICATION NUMBER SHEETS :**

1. Each sheet is divided into two parts and in each part there are two columns of combinations of letters and figures.
2. The DOM shall issue to each block station of his Division, two ID No. sheets for each adjoining block station each in a separate sealed cover.
3. When line clear has been obtained by means of ID. No. through the block telephone, control phone or the electrical communication instruments, an entry shall be made in the TSR and at the top of 'line clear ticket' at the time of issue.
4. The sealed cover of ID. No. sheet shall be opened only when it is actually required for use.
5. One ID. No. sheet shall not be used for more than one period of interruption.
6. Once an ID. No. sheet is taken out of its cover and used for an interruption, the same sheet or any other sheet, brought into use after the former sheet has been exhausted, shall be used during continuance of that particular interruption only, but on no account, a partly used sheet shall be used for subsequent interruption.
7. Used ID. No. sheets or partly used sheets shall be sent to the DOM as soon as the interruption is over and normal working resumed.

➤ **WORKING TIME TABLE :**

1. Issued separately for each division.
2. Issued by PCOM, every year.
3. Issued for the guidance of concerned Railway staff.
4. Copies are supplied to the Loco Pilots, Guards, Stations, control and other concerned staff, free of cost.
5. It contains a lot of information for the guidance of railway staff such as:
6. Section wise arrival departure particulars.
7. Sectional information.
8. MPS of each section.
9. Various information about coaching and goods stocks.
10. List of notice stations.
11. Permanent speed restrictions.
12. ART/ARME/Tower Wagon bases.
13. Signalling, Class of station, System of Working.
14. Information's about LCs & TVU etc.

➤ **WAGON WAY BILL/VEHICLE GUIDANCE**

1. Its form number is OP/T-437.
2. It is a very important train paper for Guard. The Guard in-charge of every train must be furnished with wagon way bill, properly filled in at the originating station.
3. At each terminal or starting station, it must be prepared directly from the TNC's handbook in which the TNC must record the number of each individual vehicle from engine to the rearmost vehicle of the train.

4. It must be carefully and legibly prepared in ink or by carbon process at the starting station and all the columns should be filled up by TNC and must be signed by him.
5. For through goods trains, it must be prepared in duplicate, one copy must be made over to the SM of the terminal station of the Division and the original copy should go through up to destination station of the train.
6. Guards handing over the through wagon way bill will obtain acknowledgement in their rough journal.
7. Only one vehicle is to be entered in each line of the way bill. Vehicles are to be entered in the order in which they are placed from the engine at starting station.
8. Before starting, the Guard shall be responsible for checking the load on the train with the entries on the wagon way bill of wagon numbers, booking and destination station, type of vehicle, load or empty, open or covered, etc.
9. Any detaching/attaching of wagon should be entered in the wagon way bill with the name of station, type of stock, number & load/empty.

➤ **DRS CARD :**

1. DRS means Deficiency in Rolling Stock.
2. The deficiencies of electrical & C&W fittings in passenger carrying trains are recorded in these cards.
3. Guard should ensure that it is issued by electrical & C&W staff at originating station and on arrival at destination, the same shall be returned to them.
4. In case it is not provided, the Guard should obtain a certificate from the electrical & C&W staff and record the same in T.34HF.

➤ **CAUTION ORDER REGISTER :**

1. It is maintained by SM at every station.
2. It is also known as 'URGENT ORDER BOOK'.
3. Its register No. is OP/T469.
4. It has two parts – Part – A and Part – B
5. In Part – A, notification, imposition and modification of caution order is to be written and in Part – B, cancellation of caution order is to be written.
6. Whenever any imposition, modification and cancellation message is recorded in this register, all the SMs must put their signature on it.
7. On every Monday, the SM in-charge will take a fresh page and prepare a weekly summary in red ink, which shall be acknowledged by all the SMs of that station.
8. Only one set of serial no. is to be used in this register.
9. All caution Orders which are imposed on the 31st Dec of the year is carried forward with all particulars in fresh **Urgent Order Book**. The register is maintained from 1st Jan to 31st Dec of the year. On 1st Jan every staff have to acknowledge again in the urgent order book.

➤ **NON-INTERLOCKING (NI) WORKING :**

1. It means temporary disconnection of points, signals, track circuits, axle counters, and other signaling and interlocking gadgets for any designated work like new installation of panel/ SSI/RRI, overhauling of cabin lever frame, yard remodelling, Meggering of cable, etc.
2. It can be divided into two categories i.e. minor works and major works.

3. NI Working shall be carried out by keeping in mind the following important points: -
4. Green notice is to be issued by DOM/Sr.DOM. which shall contain the following: -
 - Details of existing yard layout and it's various provisions.
 - List of all works to be undertaken by the concerned branch during NI.
 - Additional facilities to be made available after completion of new works.
 - Existing facilities that are to be dismantled.
 - Details of yard layout to be made available after completion of NI.
5. Advance preparation for train running.
6. Time tabling change.
7. Goomty and staff arrangements.
8. HOER and Duty roster shift wise.
9. Temporary Working Instructions (TWI).
10. Field level advance preparation.
11. Mock drill and staff assurance.
12. Arrangement of telecommunication, light, medical, safety equipments, security etc.
13. Introduction of & Train operation during NI working.
14. Issue of Revised SWR and completion of NI working.

➤ **GUARD's ROUGH JOURNAL BOOK (OPT-7) :**

1. It is a printed book.
2. It is a personal equipment of Guard.
3. It is issued to the Guard from their controlling office.
4. Following particulars are recorded in this book by the Guard while working a train: -
 - a.) Train No., Engine No., BPC No. & Type, Issue Stn & Date, Name of LP, ALP, their HQ, pressure level in engine and brake van, Up/Down, date and weather condition, etc.
 - b.) Booked and actual arrival/departure time of the train of each station.
 - c.) Any unusual occurrences such as failure of signals, Alarm Chain Pulling, person run over or passenger fallen out of the train etc.
5. It shall be preserved for THREE years.

Q. (30) :- Distinguish between:-

Ans. a):-

PI (Panel Interlocking)	RRI (Route Relay Interlocking)
1. This interlocking replaced the mechanical interlocking.	1. This interlocking is the developed form of Panel Interlocking.
2. All points and signals are set individually for movement of trains.	2. Entire route is set by pressing just two buttons.
3. Operation of points and signals takes more time.	3. Operation of points and signals takes less time.
4. It may or may not be Track circuited.	4. It is always Track Circuited
5. It is suitable for small yards.	5. It is suitable for Big Yards.
6. Wiring is less complicated.	6. Wiring is more complicated.

RRI (Route Relay Interlocking)	SSI/EI (Solid State/Electrical Interlocking)
<ol style="list-style-type: none"> 1. Interlocking is achieved through a number of electro mechanical relays. 2. It is more suitable for big yards. 3. Points and signals are operated through panel. 4. The system occupies more space. 5. Relays are used. 6. More power consumption. 	<ol style="list-style-type: none"> 1. Interlocking is achieved through computerized software & hardware. 2. It is suitable for both small and big yards. 3. Points and signals are operated through panel or VDU. 4. The system occupies less space. 5. Microprocessor chips are used. 6. Less Power consumption.

ORDINARY RAKE	CC-RAKE
<ol style="list-style-type: none"> 1. Subject to conventional Intensive - examination 2. It has no fixed C&W Depot. 3. Examination time is 3hrs 4. Serves minor Customers 5. No Specify running routes. 6. No restrictions of OFF POH/ ROH wagons in train formations. 7. BPC color is Light Green. 8. No need to log KMs in the BPC. 	<ol style="list-style-type: none"> 1. Subject to PME examination. 2. It has Fixed C&W base depot 3. Examination time is 6hrs 4. Serves major customers. 5. Runs in Specified Circuits as mentioned in BPC. 6. The rake is formed with OFF POH/OFF ROH or wagons having good condition. 7. BPC color Yellow. 8. KMs to be logged by Loco Pilot in every trip.

Intermediate Block Post (IBP) :

1. IBP is a C-class Block station.
2. It is an unmanned station controlled by the station in rear.
3. IBP is identified by the IB marker.
4. It may be provided in Double Line, Single Line or Multiple Line section.
5. Provision of Track circuit or Axle counter is compulsory in IB area.
6. A long block section can be split into two smaller block sections.
7. It increases the section capacity and minimizes detention.

In Single Line Section, to take off IBSS:

- First direction of traffic to be established.
- Line clear to be obtained from advance station.
- The rear section shall be termed as “ Station controlled Intermediate Block Section”.
- Advance section shall be termed as “ Block controlled Intermediate Block Section”.

Suspension of IB Signal :

- ✓ When IB fails.
- ✓ When TC/Axle Counter fails.
- ✓ When Block Instrument fails.
- ✓ During TSL working.
- ✓ When trains allowed without BV/without Guard.
- ✓ When Motor trolley allowed in the section.
- ✓ When Advance Starter Fails.

Q.(31) What are the rules for passing IBSS at 'ON'?

(A) If the SM is aware that the IBSS is defective:

- a) SM shall stop each train.
- b) Suspends the IB working.
- c) Treats the entire section a single block section.
- d) The SM shall obtain fresh "L/C" from block station in advance supported by P. No. and exchanging I.D. No.
- e) SM shall handover the LP, T/369(3b) with P. No. and I.D. No. and also mention in the prescribe form to pass the last stop signal and IBSS at "ON".
- f) While writing ID number & Private number in T/369(3b), SM shall also write pass IBS signal at normal speed subject to other speed restrictions in force.
- g) The LP shall proceed normal speed.

(B) IBSS at "ON", Telephone is working:

- a.) Driver shall stop the train in rear of IBSS.
- b.) Driver shall inform to Guard of the fact by sounding a long continuous whistle.
- c.) Driver shall contact the SM in rear over the signal post telephone.
- d.) If SM finds that the block section ahead is not clear or "L/C" has not been obtained from station in advance then he will advise the driver to stop the train until "L/C" is obtained from station in advance.
- e.) But if the SM finds that IBSS is defective, he shall after obtaining "L/C" from station in advance, shall authorise the driver to pass IBSS at "ON" and enter the block section ahead supported by I.D. No. and P. No. under which he has received L/C for the train from station in advance.
- f.) The driver shall then sound **0 _ 0** (one short, one long, one short) whistle and shall proceed ahead with normal speed.

(C) IBSS at "ON", Telephone out of order or not provided:

- a) LP will wait for 5 minutes.
- b) If after waiting for 5 minutes signal is not taken off.
- c) LP will pass the IBSS at 'ON' & proceed with a restricted speed of 15/8 kmph(15-view ahead clear, 8-view ahead not clear due to curve, obstruction, rain, fog or any other reason)
- d) LP shall be prepared to stop short of any obstruction.

(D) When there is total interruption of communication between two stations but IB Telephone is working:

- a.) Driver shall stop the train in rear of signal.
- b.) Driver shall contact with SM in rear over the signal post telephone.
- c.) SM shall inform to the driver that he is unable to obtain "L/C" due to total interruption of communication, and advise him to call the guard by sounding **__ __ 00** (two long & two short).
- d.) SM shall advice the guard to the circumstances and give a P. No. for the train to Guard shall prepare a memo in duplicate authorising the driver to proceed with P. No. received from SM. In such case speed will be **15/8 km/h.**

Q.(32):- What are the rules for backing of train on the portion of line after passing the IBSS?

Ans:- Due to unavoidable circumstances , if it is required to back the train on the portion of the line provided with track circuit / axle counter, after clearing the IBSS.

1. The Driver will inform the Guard by sounding four short whistles.
2. The Guard will check up the tail lamp/ tail board and shall proceed to protect the train as per GR 6.03.
3. The Guard shall then check the location of the train and enquire to the driver, the point up to which backing is required If the backing is not likely to foul the axle counter/ tract circuit section.
4. Guard shall give a written permission to the driver for backing indicating the approximate distance and after protecting the train with reference to the place up to which the train is to be backed.
5. If the train which has required to back on the portion of the line controlled by track circuit / axle counter.
6. The Guard shall, before giving such permission, walk to the telephone provided on IBSS and contact the SM on duty of the station in rear
7. Confirm by a private no. from the SM that no train has been allowed behind his train nor shall be allowed from station in rear till the Guard informs to the SM that his train has cleared the section.
8. Guard shall prepare a memo in duplicate & issue memo with P.NO. to the driver for backing.

Q. (33) WRITE TRUE / FALSE OR FILL IN THE BLANKS:-

- | | | |
|----|---|-------------------|
| 1 | The Goods warning board is provided at not less than 1400 meters from FSS/GSS/IBSS. | True |
| 2 | When a distant signal is placed at 1000 meters, passenger warning board need not be provided. | True |
| 3 | 'W' Board is be provided at all level crossing gates | False |
| 4 | 'W' Board will be provided at vulnerable places where the Drivers are required to whistle | True |
| 5 | Termination Indicator will be a square board with a letter T. | False |
| 6 | On double line, when Line Block is permitted on one line, TSL working on DL may be introduced in the other line | True |
| 7 | Trolley can work during night also on form T/1518 in certain areas | True |
| 8 | During Total interruption of communication, a trolley may be allowed on T/B602 to open communication. | True |
| 9 | During failure of block instrument, Motor Trolley following a train is prohibited. | False |
| 10 | A Motor Trolley can follow a train during night | False |
| 11 | The maximum speed of 4- wheeler tower wagon is 40KMPH | True |
| 12 | At stations where both Inner Distant and Distant signals are provided goods warning board will be dispensed with | True |
| 13 | MAX. ----- no. of motor trolley may be allowed in a block section | 3 |
| 14 | If the patrolman does not turn up within 15mts, caution order will be issued for speed restriction of _____Kmph during day and _____Kmph during night | 40/15 |
| 15 | Max.----- no. of track maintenance machines are permitted in a block section during line block at a time | Any number |

16	The Banner flag is a _____ signal.	Temporary fixed danger Velocity
17	Anemometers are provided to measure the _____ of wind	S & 30
18	_____ Marker Board shall be provided at a distance of----- m. from the facing point of an outlying siding	600
19	W/L board will be provided at not less than _____ meters from the gate	

Q. (34):- WHAT DO YOU MEAN BY POWER BLOCK?

Ans.:- Restriction of entry for the electric movement over a given portion of line in OHE area for the certain period is known as electric power block.

How many types of power block?

Three Types

1. Pre-arranged power block
 2. Local power block
 3. Emergency power block.
1. **Pre-arranged power block**: For the purpose of maintenance work, traction department chalk out the plans in advance to organise the power blocks on specified OHE area with co-ordination of operating department such blocks is known as pre-arranged power blocks.
 2. **Local power block**: For the purpose of maintenance work, traction department organises the power blocks in major yards without hampering the movement of through/main line with consultation of SM/CYM/YM locally, such blocks is known as local power blocks.
 3. **Emergency power block** : When situations emergent itself compels to take the power blocks in order to make OHE fit such as in times of accidents, OHE breakdown such blocks is known as emergency power blocks.

Precaution to be observed during power block:

- No electric train shall be allowed
- Block levers/collars shall be placed on concerned line
- Ensure to take acknowledgement of LP not to raise Pento during power block
- Record with red ink in TSR & Power Block Register.
- Ensure with end cabins & YM's.
- Line clear will be given only for non-electric trains, if traffic block is not granted.

Q.(35):- Write in detail about 'Green Notice'?

The object of the Green Notice is to afford advance information to all concerned on the grounds of safety so as to arrange the train services to suit the block or speed restrictions required for Engineering or Signal work.

It shall be issued by the Divisional Operations Manager on getting necessary particulars from the DEN or DSTE, as the case may be.

The DOM shall check with the DEN/DSTE whether necessary provision for the loss of time involved exists, failing which he shall make a reference immediately to COM, advising the DEN/DSTE about it.

The following items shall be incorporated in the Green Notice:-

- a) Nature of work.
- b) Probable duration of the work.

- c) Speed restrictions to be imposed.
- d) System of work such as Signals, Interlocking etc., to be introduced during the progress of the work.
- e) Various stages in which the work will be undertaken and the method of work in each stage separately.
- f) Nature of temporary signals which will be erected.
- g) Additional time required for Mail/Exp/Pass and Goods trains to cover the speed restriction.
- h) Whether the work will be done and speed restriction applied between sunrise and sunset or during the entire the 24 Hrs.
- i) Currency of Green Notice is maximum 3 Months from the date of issue.

Q.(36):- Describe the procedure for working of Motor Trolleys?

- a) A Motor trolley shall always run on 'line clear' or following a train/light engine/another motor trolley.
- b) On S/L when proceeding on line clear- The Authority will be Ball Token/ T-369(3b) with Line clear P. No. & Caution Order.
- c) On D/L when proceeding on line clear- The Authority to proceed will be T-369(3b).
- d) Speed: 40 Kmph during day and 30 Kmph at night.
- e) 15 Kmph on Point/X-ing and when passing station.
- f) On D/L, Line Clear will be granted by turning the commutator to TOL position supported by P. No. On arrival of the trolley at the station in advance, SM will give TOS report for normalising the instrument supported by P. No.

Q. (37):- Describe the procedure for working of Motor Trolley following a train/light engine/another motor trolley?

Ans. :- Both on Double Line and Single Line, a motor trolley may be allowed to follow a train/light engine/another motor trolley.

1. Maximum two motor trolleys may be allowed to follow.
2. Such following movement will be allowed during day light hours only except on the sections where such movements are restricted.
3. **When following a train/light engine, the ATP will be –**
 - a) **When only one motor trolley is following: -**
Motor Trolley Permit - (T/1525).
 - b) **When two motor trolleys are following:-**
First MT: - Caution order with P. No.
Last MT: - Motor Trolley Permit (T/1525) with P. No. & C/O.
4. Last motor trolley shall be treated as the last vehicle of the train.
5. Signals taken-off for train/light engine shall be applicable for the following motor trolleys. The motor trolleys shall be admitted on the same line.
6. In case the following motor trolley fails to follow closely, the reception signals may be put back to 'ON' position after 10 minutes, in order to perform shunting or any other movement or to clear road traffic.
7. The motor trolley may be admitted on signals on any line.
8. Before allowing following motor trolley SM shall advise the SM of the station ahead about the purpose and obtain permission supported by P. No,
9. Entry of such movement shall be made in red ink in TSR.

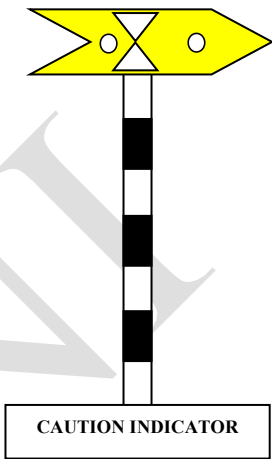
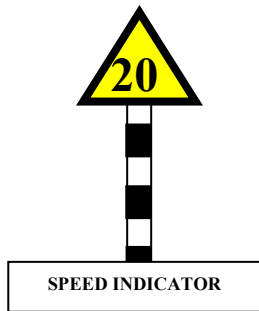
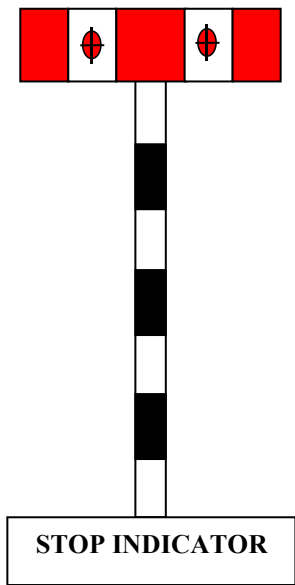
Q. (38):- Write down the procedure for running Motor Trolley in Automatic Block System?

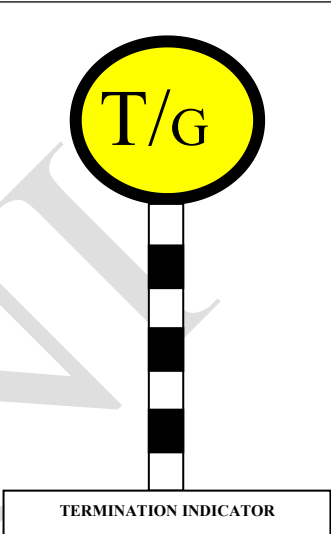
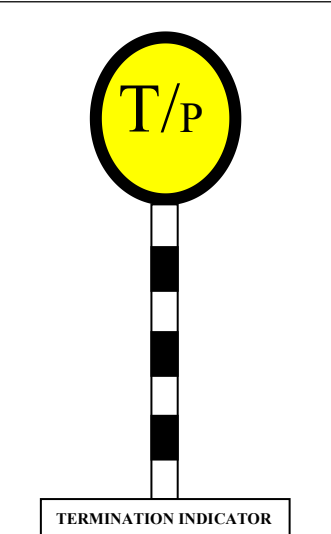
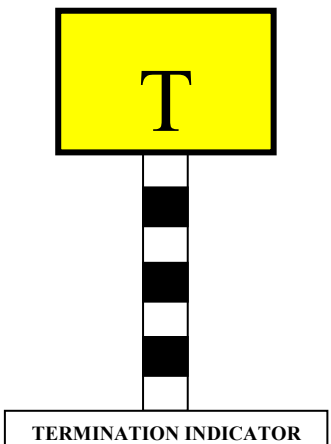
- Normally the motor trolleys are allowed during daylight hours in the following manner: -
 - At night or in emergency, when there is no train to follow, if it becomes necessary to run a motor trolley, Automatic Block System shall be suspended under exchange of P.No. and the line clear shall be obtained.
 - Authority to proceed will be T/369(3b) with P.No.
 - Automatic Block System shall be resumed only after getting arrival report supported by P. No. from the station ahead.
- If the motor trolley does not clear the section within the normal running time, the first train will be allowed with caution order to look out and proceed cautiously.

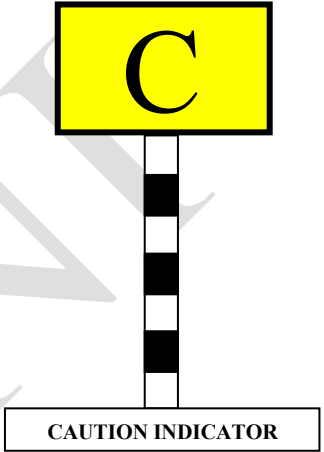
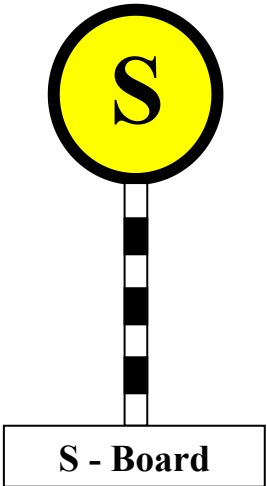
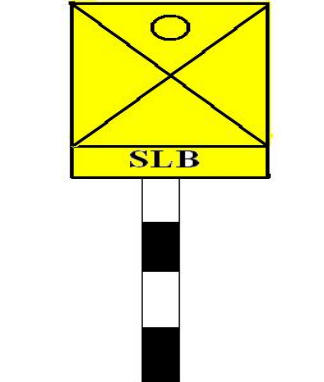
Q. (39):- Write down the duties of a Station Master, when a Patrolman does not turn up within 15 minutes from his scheduled arrival at the station?

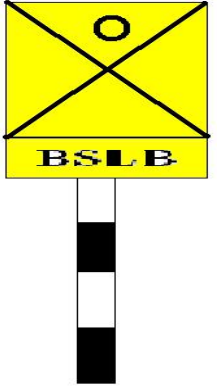
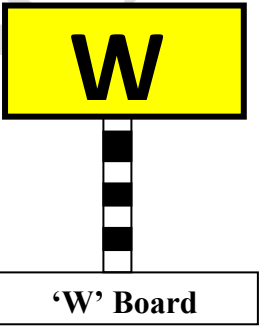
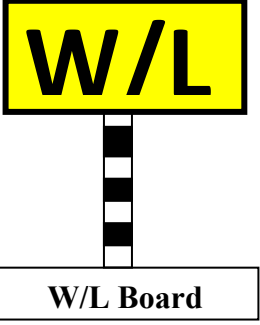
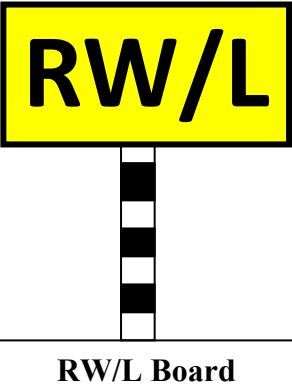
- Ans:**
- a) SM shall stop run through trains, proceeding in to the next block section out of course.
 - b) He shall advice the SM at the other end of the section to take similar action and also advice the Section Controller.
 - c) He shall issue a Caution Order to every train proceeding into the block section advising the LP to be on the alert and to observe a speed restriction of 40 Kmph during day when visibility is clear and 15 Kmph during the night or when visibility is impaired.
 - d) The Caution Order shall be issued until the Patrolman arrives and reports that the line is safe for passage of trains.
 - d) The SM shall send out a Station Staff /Gangmen to lookout for the Patrolman and the reason for delay and in case the Patrolman is not found the SM shall immediately contact the concerned Gangmate/JE/SE/SSE(P-way) to arrange for another Patrolman.

- **Means of communication provided to passengers with Guard & LP :-**
Alarm chain apparatus is the means provided with the passengers to have communication with LP and Guard in case of emergency.

Q.(40)	What are the various Engineering Indicators and Boards?
Ans	To guide the LP to take action as the conditions deserve, different kind of boards and engineering indicators are provided. The appearance, the indications that they provide, where and why they are provided are given below :
a) Caution Indicator Board :	
<ol style="list-style-type: none"> 1. It shall consist of horizontal board fish tailed to the left and pointed to the right, painted Yellow and Black fixed to a vertical post painted with high bands of Black & White alternately, keeping the lower edge of the board at height of 2.0 M above rail level. 2. The indicator shall be provided both for permanent and temporary restrictions. 3. When it is used for temporary speed restriction, two yellow lights are provided. 4. This board is provided at a distance of 1200m from place of restriction. 5. When it is provided for an outlying siding point then, it is placed at distance of 800m in rear of "S" marker board. 6. When used for temporary restriction, it will display 2 Yellow lights arranged horizontally, for permanent restriction, no light needs to be displayed. 	
b) Speed Indicator :	
<ol style="list-style-type: none"> 1. It is a equilateral triangular board painted yellow and the speed restriction is written on it in black. 2. The board is provided with a vertical post painted black and white alternately, keeping the lower edge of the board at a height of 2.0 M above rail level. 3. This board is provided at a distance of 30m from the point of restriction. 4. It is provided both for temporary and permanent speed restriction. 5. For temporary restriction, it is illuminated during night. 	
c) Stop Indicator (SR15.09.02) :	
<ol style="list-style-type: none"> 1. It shall consist of a horizontal board and painted with Red & White vertical strips. 2. The board shall be fixed to a vertical post, painted with bands of White and Black alternatively, keeping the lower edge of the board at a height of 2.0 M above rail level. 3. This indicator shall, by night, display 2 Red lights provided horizontally. 4. A signal man shall be posted for hand signalling trains past the stop indicator, after verifying that there is no danger to the trains if allowed at restricted speed. 5. As soon as the train stops the Signaller shall obtain the signature of the Driver on the Restriction Book (Stop Order) and then allows the train to proceed by showing a Green hand signal. 6. Engineering Stop Order form E.D. 9.39 (for UP trains) and E.D. 9.40 (for Down trains) shall be used for the restriction books maintained with the Signal man. 7. It is provided at a distance of 30m from the stopping point. 	

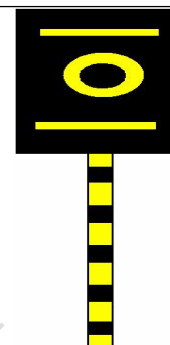
d) TERMINATION INDICATOR : (SR15.09.02)	
<p>This board indicates the 'LP' to regain normal speed as the spot of speed restriction has passed. Termination indicators are of the three types: 1) Termination board for passenger trains (TP), 2) Termination board for goods trains (TG), 3) Termination board (T)</p>	
1. Termination Indicator (Goods Train) :	
<ol style="list-style-type: none"> These indicators shall consist of Yellow painted 1.0 M diameter disc and bearing letters T/G in Black. These shall be fixed on vertical post painted with bands of White and Black, keeping the centre of the board 2.15 M above the rail level. The termination indicator bearing letters T/G shall be fixed at a distance beyond the restricted length equal to the length of the longest goods train running on the section. It is provided at a distance of 700m from the restriction zone or equal to the length of longest Goods train in the section. It is also provided at a distance of 1400 M from the restriction zone for long haul trains. The boards shall indicate to the LP the point from which the normal speed may be resumed. The termination indicators provided for temporary restriction shall be illuminated at night by fixing a hand signal lamp. 	
2. Termination Indicator (Passenger Train) :	
<ol style="list-style-type: none"> These indicators shall consist of Yellow painted 1.0 M diameter disc and bearing letters T/P in Black. These shall be fixed on vertical post painted with bands of White and Black, keeping the centre of the board 2.15 M above the rail level. This is a circular board painted yellow and "T/P" is written on it in black paint. It is provided at a distance of 550m from the restriction zone or equal to the length of longest passenger train in the section. The boards shall indicate to the LP of a Passenger carrying train, the point from which the normal speed may be resumed. The termination indicators provided for temporary restriction shall be illuminated at night by fixing a hand signal lamp. After passing the zone of speed restriction by the EMU trains, the Guard shall give the Bell-code signal to the Motorman to pickup the speed. 	
3. Termination Indicator at vulnerable locations :	
<ol style="list-style-type: none"> A Termination Board, of the same description as the caution board, but bearing the letter 'T' instead of 'C' shall be fixed at a distance beyond the vulnerable bridge of length, equal to the length of the longest train running on the section. Where the length between the 'C' and 'T' board exceeds 1.6 Km, a series of 'C' board shall be provided at intervals of 800 M to remind the Driver that the vulnerable length has not been passed completely. On single line section, the first and last boards may have the letter 'C' and 'T' painted on opposite faces so that no separate 'T' board need be provided. Intermediate boards, if any, shall have the letter 'C' painted on the both faces. These special Caution and Termination boards shall be fixed and maintained in position only during the monsoon season and need not be lit up at night. 	

<p>4. When a Loco Pilot comes to a, 'C' board, whether by day or by night, he shall remain specially vigilant and be prepared at any movement to reduce the speed or to stop, should he receive a signal from any Stationary Watchman, Patrolmen or Gangmen or should he himself observe any danger to the track. In the absence of any indication to the contrary the Loco Pilot may resume normal running on his passing the 'T' board.</p>	
<p>e) Caution Indicator at vulnerable locations :</p> <ol style="list-style-type: none"> 1. At such of bridges, where during monsoon, water level may touch the danger level mark, and also at other vulnerable locations as considered necessary (i.e. where there is likelihood of danger arising suddenly during monsoon), 2. Provided to enable the LPs attention being drawn to the need for extra caution over such locations. 3. These boards shall be painted Yellow and bearing letter C in Black and fixed vertical posts painted bands of White and Black keeping the lower edge of the board 2 M above rail level. 4. Such a board shall be fixed at a distance 1200 M in respect of the point from which the vulnerable bridge or location starts. If the length between 'C' & 'T' board is more than 1.6km, a series of 'C' boards shall be provided at intervals of 800m. 	
<p>f) "S" MARKER: (SR3.35.01)</p> <ol style="list-style-type: none"> 1. It is an indicator to indicate the LP for points at the outlying sidings outside the station limit. 2. It shall be placed 30 m in rear of the facing points of the outline siding. 3. A speed indicator if any shall be fixed below the "S" marker to indicate the speed restriction. 4. It shall be preceded by a caution indicator fixed at 800 M in rear of "S" marker, in addition, the speed shall be given on the caution indicator board also. 5. A "TP" board shall be placed at distance of 550 M and a "TG" board at a distance of 700 M shall be placed beyond the outlying siding point to indicate the Loco Pilot for resuming the normal speed. <p>Note: The Caution Indicator board, should not be hung from OHE mast and should be fixed on separate post using unserviceable rail post and fixed at a distance clearing in infringement of all moving dimensions.</p>	
<p>h) SHUNTING LIMIT BOARD(SLB):</p> <ol style="list-style-type: none"> 1. SLB provided to expand the station section. 2. SLB demarcates the end of station section and the beginning of the block section. 3. SLB provided 180m outside of the home stop signal. 4. A lamp is fitted on it showing white light on both directions. 5. SLB shall be provided if the following conditions are satisfied <ul style="list-style-type: none"> ⇒ Absolute block system ⇒ Single line ⇒ B-class station ⇒ TALQ/MLQ/MACL Signalling arrangement ⇒ Where there is no advance starter. 	

<p>g) BLOCK SECTION LIMIT BOARD (BSLB):</p> <ol style="list-style-type: none"> 1. BSLB demarcates the end of block section and the beginning of the station section. 2. BSLB provided 180m inside of the home signal. 3. A lamp is fitted on it showing white light on both direction. 4. BSLB shall be provided if the following conditions are satisfied <ul style="list-style-type: none"> ⇒ Absolute block system ⇒ Double line ⇒ B-Class Station ⇒ MLQ/MACL Signalling arrangement 5. It is provided where the outermost point at the approaching end are trailing or there is no point. 	
<p>i) WHISTLE BOARDS (SR 4.50.02) :</p> <p>Types of whistle Boards :- There are three types of whistle boards as follows :</p> <p>a) “W” board b) “W/L” board. C) RW/L board</p> <p>a) “W” board:</p> <ul style="list-style-type: none"> • It is a yellow coloured board, and W is written in black paint. • Its post is painted alternately black and white. • It is provided to warn the staff working on the line, on the approaches of curves or cuttings or tunnels. • It is provided at a distance of 800m from the site, where the visibility is limited to 800 m or less. • The duty of the ‘LP’ on approaching this board is to sound one long continuous whistle until the view ahead is clear. 	
<p>b) “W/L” BOARD :</p> <ul style="list-style-type: none"> • It is a yellow coloured board and W/L is written in black paint. • Its post is painted alternately black and white. • It is provided on the approaches of all manned and unmanned level Crossings. • It is provided at a distance of 600m from the from the level crossing. • This board should be in bilingual. • The duty of a ‘LP’ on approaching this board is to sound intermittent Long whistle up to RW/L board in case of unmanned LC or up to manned LC. 	
<p>c) ‘RW/L’-BOARD :</p> <ol style="list-style-type: none"> 1. It is a yellow square board with capital ‘RW/L’ is written in black paint. 2. Its post is painted alternately black and white. 3. It is provided on the approaches of all unmanned level Crossings only. 4. It is provided at a distance of 250m from the level crossing followed by W/L board. 5. This board should be in bilingual. 6. The LP of every train shall sound engine whistle continuously upto LC gate. <p>NOTE: If W/L board of one LC is located near the R W/L board or within the continuous whistling zone of another LC (i.e. within 250 m of LC), then the whistling code of RW/L board should be followed.</p>	

j). GOODS WARNING BOARD: OPM-13.07

1. It is a rectangular board, colored black with two yellow horizontal bars at both ends on yellow round at the centre.
2. This is placed at not less than 1400m from FSS/IBSS/GSS, which is not pre-warned by the provision of Warner or Distant Signal.
3. not lit during night
4. On BG where the MPS of goods train is 75kmph and passenger train speed is 100kmph, this board will be provided.
5. If Distant/Warner signal is placed at 1000m from home, then this board shall be dispensed with
6. This is to warn the passenger train driver that they are going to face a stop signal.

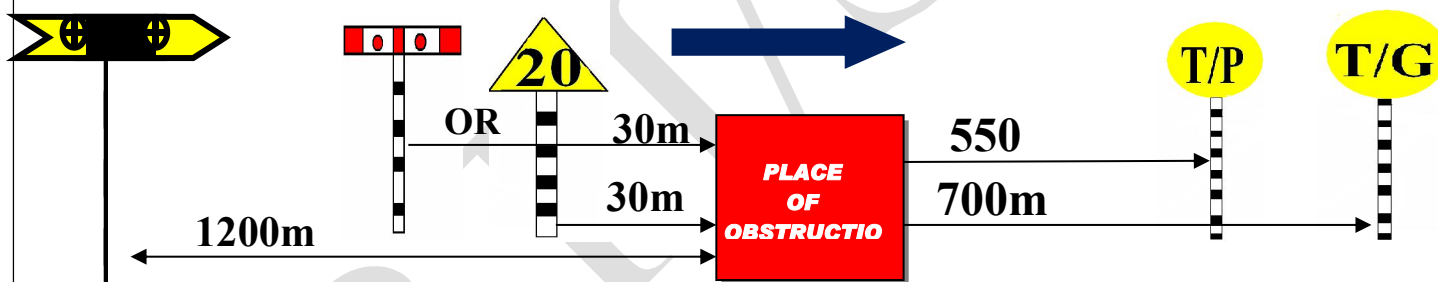


k). PASSENGER WARNING BOARD: OPM-13.07

1. It is a rectangular board, painted alternatively yellow and black diagonally.
2. Not lit during night.
3. It is provided at not less than 1000m from FSS/IBSS/GSS.
4. If distant/warner signal is placed at 1000m from Home, then this board shall be dispensed with.
5. This is to warn the passenger train driver that they are going to face a stop signal.



GR 15.09(b):- WORK IS FOR MORE THAN A DAY AND THE TRAINS ARE REQUIRED TO BE STOPPED: Protection shall be done as follows



Q.(41):- DETONATOR (SR 3.59)

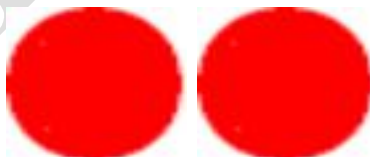
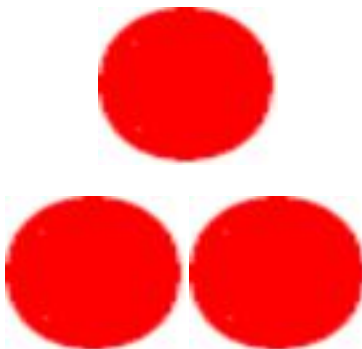
1. Detonator is an appliance, used as an audible signal or fog signal,
2. It is fixed on the rail-head and when an engine or a vehicle passes over.
3. It explodes; it alerts and draw the attention of the LP/ALP.
4. It is a round-shaped shell made of tin plate, painted in red, filled up with gunpowder inside (contains 10 pieces in a Tin/Plastic case).
5. On the detonator, manufacturing month and year is embossed.
6. The normal life span of detonators is 5 years from the year of manufacture, it can be revalidated upto 8 years after suitable testing.
7. It can be revalidated by testing two detonators every year randomly in a speed 8-12 Kmph up to 1+1+1=3years.
8. The safety radius of a detonator is 45 meters.
9. It is supplied in the prescribed quantity to the LP, Guard, SM and engineering staff to use in exigencies and during protection.
10. Detonators should be handled with care as they are liable to explode, if handled roughly.
11. Detonators should be kept/stored in a dry place.

DISPOSAL OF DETONATORS SR 3.64.06 & 07:-:

Disposal / destruction of time-expired detonators shall be carried out, ensuring due safety, preferably in the presence of a gazetted officer (but, never below the rank of a senior subordinate), by any one of the following methods:

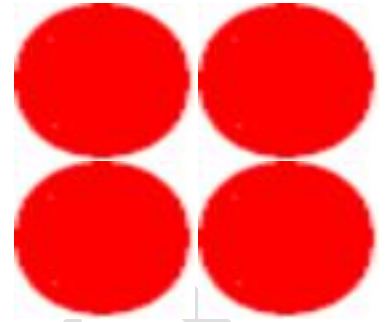
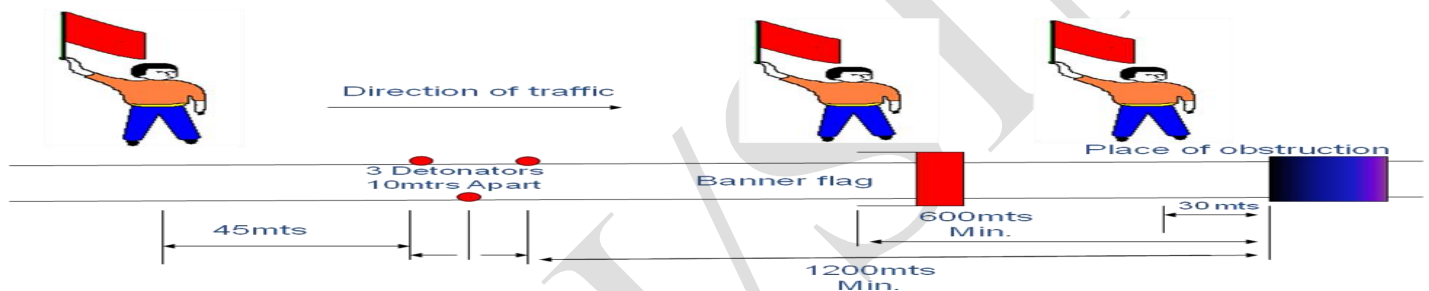
- ☞ By soaking in light mineral oil for 48 hours and throwing them cautiously into fire, one by one.
- ☞ By burning them in incinerator.
- ☞ By detonating them under the wheels of wagons, preferably during shunting operations.
- ☞ By throwing them in deep sea.

PLACING OF DETONATORS:

1. <u>ONE DETONATOR</u> <ul style="list-style-type: none">➤ One detonator shall be placed at a distance of 90m from the reception signal (outer, Home) and Gate stop signal found defective at OFF position.➤ One detonator shall be In case of an emergency, to protect an obstruction in block section by the Engine Crew, Guard or Engineering staff. No specific distance for placing it.	
2. <u>TWO DETONATORS</u> <ul style="list-style-type: none">➤ Two detonators shall be placed at a distance of 270m and 10m apart, in case of thick and foggy weather from the FIRST STOP SIGNAL➤ Two detonators shall be placed at a distance of 270m and 10m apart by PWI Staff in case of thick and foggy weather from the CAUTION INDICATION BOARD, when visibility is less than 180m SR-3.61.01.07(n).	
3. <u>THREE DETONATORS</u> <ul style="list-style-type: none">➤ Three detonators shall be placed at a distance of 90M -90M -10M in case of accident/obstruction in Automatic System of working.➤ Three detonators shall be placed at a distance of 250M- 250M- 10M, when a train allows on the authority of Block Ticket.➤ Protection during TIC, Three detonators to be placed at a distance of 250-250-10M.➤ Protection of Engg work site. Banner flag at 600M and 3 detonators 10m apart from 1200M.➤ Protection in Train staff Ticket/Following train system/Pilot Guard System- Three detonators to be placed at a distance of 250-250-10M	

4. FOUR DETONATORS

- Four detonators shall be placed at a distances of 600(M) – 600(M) – 10(M) – 10(M), in case of accident and obstruction in S/L or D/L section in Absolute Block system.
- Protection of adjacent line in Absolute and automatic Block Section. Four detonators shall be placed at a distances of **600m – 600m – 10m – 10m**.
- During obstruction at level crossing gate shall be protected by a banner flag at a distance of 5m. from the edge of the road/ obstruction, four detonators at a distance of **600m – 600m – 10m – 10m** from the level crossing according to the direction of traffic in double line and both side in single line section (S.R.16.07.01).



WHEN ENGINE EXPLODES DETONATORS:

- ▶ Single detonator, stop the train.
- ▶ Two detonators, control train immediately
- ▶ Three detonators control train and move cautiously.
- ▶ After proceeding 1.5 km, if the driver does not explodes any more detonators or sees no other signals, he may then resume authorized speed.

Q (42) – What is caution order?

Ans – Whenever in consequence of the line being under repair or for any other reason, special precautions are to be exercised for which a written advise detailing the KM between which such precautions are to be exercised, the reason for such precautions and the speed at which the trains is to travel, is given to the driver at the stopping station, immediately short of the place where such precautions are necessary, or at the notice station or from where the train originating is called caution order.

Q (43) – What are the various kinds of Caution Order? What are their prescribed form no.? What contents are written?

Ans – caution orders are of three types: -

- (a) Divisional caution order (T-409)
- (b) Nil caution order (T/A-409)
- (c) Reminder caution order (T/B-409)

Caution order is prepared in carbon process.

1st Foil is kept in record,

2nd Foil given to the driver and

3rd Foil given to the guard.

If 4th copy is required then it is prepared on plain paper.

Caution order contains the following columns.

Sl no,

Between station,

Speed restriction,

Cause/remarks

- ☞ In caution order station name shall be written in full.
- ☞ Any correction found necessary in a caution order shall be done neatly in ink and duly attested by the SM issuing the same.
- ☞ No over writing shall be resorted to.
- ☞ The driver shall not start the train until they have received the caution order.
- ☞ The km and the stations shall be indicated in geographical order in relation to the direction of movement.
- ☞ Every caution order shall be signed by the SM with date.
- ☞ Before handing over the caution order to the driver & guard acknowledgement must be obtained from them on the record foil.
- ☞ The record foil of caution order shall be preserved for a period of 12 months after issue.
- ☞ The LP shall hand over their copies of caution order to the SSE(LOCO) /SSE(Tr./OHE)/SM at the end of the journey.

Q (44) – Write down any ten circumstances when Caution Order is required to be issued.

Ans – C/O is issued in the following circumstances:-

- (a) To look out for a train, which is overdue.
- (b) When a train is to be received on a blocked line.
- (c) When any interlocked point goes out of order.
- (d) When a material train works in the block section.
- (e) On a single line section when the token is lost.
- (f) When a train is to be received on non- signalled line.
- (g) When level crossing gate is damaged.
- (h) When communication cannot be established with the gateman.
- (i) In case of bad riding.
- (j) When a dead body is found on or near the track.

Q (45) – What is the procedure for imposition of caution order?

Ans – When a competent railway servant finds it necessary to impose any speed restriction or any special precaution on a portion of line including OHE due to any reason he shall -

- (a) I- Advise the SM of the nearest block station in writing detailing the exact kilometre, station at which or the stations between which such precautions are to be observed , its nature and duration, the method of protection of the place etc. He shall also advise the SCR, TPC, loco foreman, TFR, SM of notice station, DTI, CHC, DEN, DOM, DEE
II- He shall not commence such operation until written permission is received from the SM.
- (b) The SM receiving the advice shall not acknowledge it until he has advised the SM of the block station at the other end of the block section to be affected and obtained his acknowledgement.
- (c) The SM after giving acknowledgement to the advice shall obtain acknowledgement from the SM of notice stations and SCR.

Q (46) – What are the procedure for cancellation of Caution Order?

Ans – When the cause of restriction or special precaution is removed, the competent railway servant concerned shall advise this fact to the SM of the nearest block station, under exchange of private number and officials concerned who were notified earlier.

Q (47) – What is C/O register?

Ans –

- a. It is an important register which is maintained at all stations.
- b. The SM shall keep an up-to-date record of all the restrictions imposed, with the date of its imposition and cancellation, authority, nature etc.
- c. It is maintained on prescribed form no-OP/T-469.
- d. This register has two parts i.e. Part-A & B.
- e. Part-A is maintained for restrictions imposed or modified and part – B for restrictions removed.
- f. Only one set of Sl. No. is used for both parts, which commence from January 1st every year.
- g. On every Monday the SM in-charge shall prepare C/O summary in red ink in a fresh page.

Q (48) –What is Last Vehicle Indicator?

Ans - In order to indicate the train passing staff, that a train is complete, an indicator is affixed, in rear of the rearmost vehicle of a train which is called Last Vehicle Indicator. It may either be –

- (a) A tail board of approved design (by day)
- (b) A red lit tail lamp of approved design during night or in thick foggy or tempestuous weather impairing visibility or inside tunnel.
- (c) A red cross on white background on right hand bottom corner for EMU/DMU/MEMU/DEMU. During night, a RED light flashing or static will be used in addition to RED CROSS on white background.
- (d) In exceptional circumstances a red flag may also be used in lieu of tail board or an unlit tail lamp with the prior approval of DOM/DSO.

Q (49) – What is intact arrival register?

Ans.

- ✓ It is an important register which is maintained for the purpose of obtaining complete arrival certificate from the guard, in case when there is any doubt regarding the complete arrival of the train at the station or when advised by the station in rear.
- ✓ It is maintained on prescribed form no.T-1410.
- ✓ It contains five columns i.e. – Sl /No, Date, Train No, Time and Signature of guard.
- ✓ When SM requires to obtain certificate from the guard he fills up the concerned columns and sent the register to the guard who in turns signs in the concerned columns with time after getting assured that the train is complete and LVI is in its proper position, the train has cleared the fouling mark.

Q (50) – What are the duties of SM when a train arrives at his station without LVI?

1. When SM comes to know that the train has arrived without LVI, he shall –

- (a) Advise the CM, when instrument is provided in the cabin to withheld the closing of block instrument supported by P.No. If the instrument is with the SM he should withheld the closing of block instrument.
 - (b) Send a competent railway servant to the guard of the train with intact arrival register after filling up the concerned columns.
 - (c) Close the block instrument only when he observes green hand signal jointly given by the guard and station staff but L/C cannot be given till the register is received back by the SM.
2. The guard shall not sign the same unless he has satisfied that the LVI is in its proper position and the train is standing clear of fouling mark of the adjoining lines or derailing switch or clearance/lock/fouling bar where provided .

Q (51) – What are the duties of SM when a train passes a station without LVI?

When a train passes a station without LVI:-

- (a) The SM shall at once advise the SM of the station in advance by giving 6-2 beat over block instrument and also over block telephone.
- (b) He shall also advise the SM in rear by giving 6-3 beats, SCR is also advised.
- (c) At stations where block instrument is installed in the cabin the SM shall obtain an assurance supported by P. No. from the person on duty that the closing of instrument is withheld and that the block section will not be closed until advised by the SM supported by P. No.
- (d) The SM of the station ahead shall take immediate step to stop the train and obtain a certificate from the guard in the complete arrival register and advise the SM in rear from which such message was received.
- (e) The SM on receipt of such advice that the train is complete shall initiate to close the block instrument supported by P. No.
- (f) On double/treble/parallel single line section the SM on duty must arrange to put back the fixed signal at "ON" to stop any train from the same/opposite direction and issue C/O to proceed cautiously and stop short of any obstruction.

Q (52) what are the personal equipment of a goods guard? SR 4.19.01– (a)(ii)

The personal equipments of a guard working goods train are as follows:-

- 1. Torch cum flashing H.S.Lamp-1
- 2. H.S.Flag- (Red-2, Green-1 mounted on stick)
- 3. Detonators-10 in a case
- 4. Guard & LP hand book-(Print or digital)
- 5. WTT with all correction slips (Digital)
- 6. Whistle-1
- 7. Flashing Tail Lamp-1
- 8. Rough Journal-1
- 9. Guard's memo book-1
- 10. Padlocks-3 (large-2, small-1)
- 11. Air Pressure Gauge with quick coupler-1
- 12. Chain with a suitable lock for securing brief case-1
- 13. Tail Board
- 14. Hammer
- 15. Chisel

Q (53) – What are the personal equipments of the guard working passenger trains? SR 4.19.01 – (a)(i)

The personal equipments of guards working Mail/Express/Passenger trains are –

1. Torch cum flashing H.S.Lamp-1
2. H.S.Flag- (Red-2, Green-1 mounted on stick)
3. Detonators-10 in a case *
4. Guard & LP hand book-(Print or digital)
5. WTT with all correction slips (Digital)
6. Whistle-1
7. Flashing Tail Lamp-1
8. Rough Journal-1
9. Guard's certificate book-1
10. Guard's memo book-1
11. Padlocks-3 (large-2, small-1)
12. Carriage Key-1
13. ACP Resetting Key-1
14. Complaint/ Suggestion Book-1
15. Chain with a suitable lock for securing brief case-1
16. Tail Board
17. Hammer
18. Chisel

Q (54) – What are the brake-van equipments?

Brake-van equipments of all trains carrying passengers are:-

- Ambulance Stretcher-1
- Portable Telephone-1
- Fire Extinguisher-2 each in front and rear BV
- Emergency lighting equipment-1 set each in front and rear BV
- Wedges-2
- First Aid Box-1

Q (55) – What are the rules for working trains without guard?

- (1) In emergency or under special instructions train may run without Guard.
- (2) There should be continuous and effective pressure from engine to rearmost vehicle.
- (3) If without Guard from originating station, LV number & type should be mentioned in the BPC by SE(C&W).
- (4) If no Guard is provided at intermediate point LP on being informed by SM, shall examine the brake power and also ensure that the rearmost 3 pistons (including BV) are in proper working order.
- (5) LVI should be fixed at the tail end of the rearmost vehicle by the LP.
- (6) C/Order indicating running of train without Guard and last vehicle number to be issued to the LP.
- (7) LV number and running of train without guard shall be mentioned in each line clear enquiry and reply message or with the departure report in Auto section.
- (8) The duties of the Guard for protection of the train shall devolve on the LP.
- (9) In automatic Block system or in Intermediate block signalling, a second train shall not be allowed to leave the block station unless the previous train without Guard arrives at the next block station complete except in case of an accident or failure of the train.

Q (56) – What are the rules for working trains without brake-van?

- (1) In emergency or under special instructions train may run without Brake van.
- (2) There should be adequate pressure from engine to rearmost vehicle.
- (3) In BPC (Mech-V5) number and description of last vehicle should be mentioned by SSE(C&W).
- (4) Guard at originating station shall relay the last vehicle number to the SCR and SM.
- (5) LVI should be fixed at the tail end of the rearmost vehicle by the Guard.
- (6) LV number should be repeated in line clear enquiry and reply message.
- (7) SM/CM must ensure that the train is provided with LVI before closing the block section & before giving Train Entering Section report to the block station in advance.
- (8) If the SM is unable to see the LVI of a passing through train, he shall at once inform the SM of station in advance to stop and examine the train. Until Train Out of Section report is obtained SM shall not close the section.
- (9) Guard shall travel on the engine.
- (10) In automatic Block system or in Intermediate block signalling, a second train shall not be allowed to leave the block station unless the previous train without BV arrives at the next block station complete except in case of an accident or failure of the train.

Q (57) – What are the duties of railway men when hot axle is noticed in a train?

When hot axle is noticed by any railway man it should be reported to the guard and LP, SM etc. by any means of communication:-

- (a) Guard and LP as soon as come to know about hot axle will stop his train and examine jointly the condition.
- (b) If the condition is not so serious they should proceed cautiously up to next station in the mean time they should also intimate the SM.
- (c) The SM who observes the hot axle should try to stop the train and take action as per seriousness of the hot axle but if he fails to stop the train he should intimate the station in advance by giving 6-1 beat and should also advice the SCR.
- (d) When the SM gets the message that a train with hot axle is approaching his station he should try to receive such trains directly on main line if possible but when the main line is obstructed and such train is to be received on loop line, he should first stop the train at the FSS and then arrange to receive the train on loop line.
- (e) If the condition of hot axle is severe it will be detached and intimated to all concerned.

Q. (58) Write in detail about 'All Right Exchange of Signal'.

When the train is running in safe and proper manner, green hand signal is exchanged between the guard & Loco Pilot or between crew/guard and station staff.

Rules for exchange of signals between Loco Pilot and Guard:-

- Signal shall be exchanged by waving of green hand signal horizontally on straight from left hand side of engine/B-van and on curves from suitable side.
- When a train is ready to start, after stopping at station, yard or outside station limit, the Guard shall ensure that everything is all right to start the train, then give usual starting signal from his brake van/SLR.
- LP will acknowledge by prescribed whistle code and start the train. (____0)

- If signal is not visible due to curve, cutting, bridge or any other reason, Guard to give verbal permission to start the train, over walkie talkie. While doing this he shall give his identity along with station name/train no. and also confirm the identity of the LP.
- LP shall acknowledge it through whistle code (_____) and start the train.
- After train starts the Guard shall satisfy everything is right and exchange all right signal, after the last vehicle passed over the points on quitting the yard.
- LP/ALP shall acknowledge it by prescribed code of whistle and with hand signal.
- If Guard signal not received, LP shall sound prescribed whistle code (00) to call for Guard or contact in walkie-talkie, if no response LP must stop the train.
- At stations where it is not possible to view the signal displayed by Guard after starting, it is sufficient to exchange signals when they are visible to each other.
- For passing through trains signal shall be exchanged after quitting the yard.
- If LP does not receive signal of Guard, he shall sound 00 whistles, if signal is still not given train shall be stopped.
- In case of EMU/DMU/MEMU/DEMU exchange of signal shall be done by using bell code.
- Exchange of signal by Guard of Rajdhani exp not required when train starts after stopping outside station limit.
- Exchange of signal by Guard of Rajdhani/Satabdi/Duronto types trains having AC guard compartment is not required. However, Guard to have sharp look out and see the signal exhibited by station staff and gateman.
- Guard of running train is responsible to watch any train passing over adjacent line.
- Guards of trains running in opposite direction shall examine each others train. The Guard of these two trains shall exchange green hand signal between themselves.
- Train running in same direction: The Guard of both the trains shall observe each others train.
- Guard of the train which overtakes the other train shall exchange green hand signal with the LP of the other train. In case of any unsafe condition is observed and the Guard and LP does not exchange signal with the Guard of the train noticing the condition, shall bring his train to stop to the next station and report the SM.
- SM shall take steps to stop and examine the train at the next station which it is about to pass. LP will examine the train.

The Guard while working a train should take the following actions:

- The Guard shall observe and exchange signal with train/trains passing on the adjacent line/lines in the block section/stationary at a station.
- The Guard shall watch train in curvature, exchange signal with LP/ALP, any abnormality to be reported to LP/ALP.
- The Guard shall remain attentive towards C/O & inform LP/ALP after last vehicle clears restricted zone.
- After clearing cross over while passing over loop line the Guard must appraise LP/ALP.

Exchange of signal with station staff

- SM should observe the condition of the running through train and exchange all right signal with LP Guard from his office side.
- If view is obstructed, he shall depute one staff for the same purpose.

- At station with no cabins/LC gate lodge or cabins at the same side, SM shall depute a staff at the other side to observe the passing through trains.
- On double line or multiple line section, when trains run through simultaneously or train is standing on the adjacent line, SM shall observe one train and depute a competent staff for the other train.
- SM shall wave a green hand signal until any thing wrong with the train is noticed.
- Any abnormality to endanger the safety of train is noticed, the SM/CM/Staff shall at once show the red hand signal to stop the train.
- If train cannot be stopped, intimation shall be given to the next station (6-1), SCR and TPC in required.
- LP and Guard shall be on the look out for the signal displayed by SM/CM/Gateman.
- If they observe stop hand signal, immediate action to be taken to stop their train.
- While passing through a station, LP shall sound long continuous whistle.
- All the duties of LP w.r.t exchange of signal shall be devolved upon ALP at his respective side.
- If LP/Guard fails to exchange signal with station staff or not sounded the prescribed whistle the SM shall report to the SCR and the SM of next station, who shall stop the train and hand over a written warning to the defaulter.
- If station staff fails to exchange signal with LP & Guard, they should exercise extra caution to ensure all is right and record the same in Guard rough journal.

Exchange of signal at L/C gate:

- The Gateman at all level crossing gates should stand attentively at the gate lodge side, facing the track with furred red and green flags during day in right and left hands respectively and at night hold the hand signal lamp with white light pointing towards the track.
- Gateman shall watch all passing trains to see any unusual condition like hot axle, hanging parts, vehicle/wagon on fire and load shifted etc. and take prompt action to warn the LP and Guard by showing danger signal.
- The LP and the Guard should be on the lookout for such danger signals.
- The Gateman shall also inform the Station Master on telephone.
- If the train is found passing normal, the Gateman must exchange 'all right signal' with the Guard.
- The Guard shall in turn exchange 'all right signal' with LP/ALP.

Q. (59):- How all right signals are exchanged?

- Signals shall be exchanged by waving green hand signal horizontally from the left side on a straight road.
- On curvature it is from the side enabling to see the signals. Action to be taken when Guard/Driver fails to exchange signal
- When driver and guard fails to exchange signals with the station staff the train will be stopped at the station in advance and the SM will hand over written warning to the defaulting staff.

Q. (60):- Describe in detail about the working of material train?

- Material train is a departmental train worked under special instruction.
- The train will consist of a certain number of wagons for the carriage of railway material and one or more brake vans properly equipped.

- Ordinary traffic wagons may be attached to material train with special instruction from DRM.

Working hours:-

- Material train shall work during day light hours only.
- Actual working hours shall be restricted to the time allowed by section controller.
- During the interruption of control circuit, the SM may notify the time allowed for its work, in consultation with the SM at the other end.
- A material train may run during the night from and to its stabling station without execution of work.

Under special circumstances material train is allowed to work in the night with the following condition:-

1. The engineering supervisor on the train should not be below JE (P-Way)/JE (TRD).
2. Loading and unloading of rails between stations is not permitted.
3. A portable generating set should be carried on the train with adequate number of flood lights.
4. Female labours should neither be engaged nor carried on the train.

A material train shall be worked under the system of working in force.

- On D/L section, when working on proper line, on completion of work, it shall proceed to the next block station in advance & return, if required on the proper line.
- The authority to proceed shall be taking "Off" of the last stop signal.
- On D/L, it may be allowed to work on wrong line & return. In such case, the concerned section must be blocked back.
- The authority to proceed shall be "Caution order".

A material train shall be worked under the system of working in force.

- On single line, it may be allowed to work between stations & proceed to the next block station or return to the block station from which it is about to start. The authority to proceed shall be "Token or taking 'off' of the last stop signal.
- On both D/L & S/L section, when material train is to be allowed to work in obstructed block section, The authority to proceed will be "Block Ticket" & the train inspector is not below the rank of JE(P-way) or JE(TRD).

A material train shall be worked under the system of working in force.

- The SM shall advise to the other end of the SM about the programme of material train that the duration of it before it is allowed to leave.
- SM shall give fresh "Authority to Proceed" for each trip.
- A caution order shall be issued to the driver notifying the time at which the block section must be clear & whether the train has to proceed or return.

Speed of the material train:-

- When the M/T running through between block station speed shall be same as goods train.
- The speed of the material train working between stations shall not exceed 25KMPH.
- The speed of the material train working with "Block Ticket" between stations shall not exceed 15/10 KMPH.

When engine is pushing the train or middle of the train & B/V is leading.

- The speed shall not exceed 25 kmph on straight & 08 kmph over turnout.

- The Guard shall travel in leading B/V & must exhibit necessary hand signals to the LP.
- When approaching any non interlocked station the Guard shall satisfy himself that the facing points are properly manned before hand signaling to the LP.
- The LP shall keep a good look out ahead & be prepared to stop short of any obstruction.

When the engine is pushing the train or is placed in middle and the B/V is not leading:-

- The speed shall not exceed 08 kmph.
- The Guard shall travel on the leading vehicle & exhibit hand signal to the LP.
- The train crew shall keep a good look out ahead & be prepared to stop short of any obstruction.
- When train is approaching any non interlocked station, the Guard shall satisfy himself that the facing point is properly manned before hand signaling LP.

On arrival of a Material train at a station after working in mid section:-

- The Guard & Train inspector shall issue a joint memo to the SM certifying the complete arrival of Material train & nothing has been left infringing the running lines.
- When Material train returns to the stations from which it started, the SM shall issue a message to the SM of the concerning block section at the other end that the train has returned & the block section is clear.

Protection of Material train in block section:-

- Whenever Material train comes to a stand for a period over 15 minutes or in the event of any other train is approaching on the same line, the train inspector shall arrange for protection of the train with banner flags held across the track at a distance of 600 mtrs & shall place 3 detonators on the track 10 mtrs. apart at 1200m .

Workers on Material train:-

- Before giving the signal to start, the Guard shall:-
- Advise the Engineering official in charge that the train is ready to start.
- That all the workers are on the train and warn them to sit down.
- Ensure that all wagon doors are secured.

Protection of Material train when stabled at a station.

- A Material train shall not be stable on a running line at a station, except in unavoidable circumstances.
- The vehicles are properly secured and not fouling any points and crossing.
- All points are properly set against the line and have been secured with clamp & padlock.
- SM shall keep the keys in his personal custody, until the Material train is ready to leave.
- SM & Guard shall jointly ensure that sufficient no. of hand brakes have been applied & secured by safety chains & Pad locked.

Q. (61) What are the rules for starting of train?

LP shall not start his train without proper authority to proceed. Where necessary hand signal are given and line before him is clear of visible obstructions and guard has given signal.

- Guard shall give signal only after receiving permission of the SM to start as prescribed in special instruction.

- Guard will give starting signal when he will satisfied himself that no person is traveling in any compartment or vehicle not intended for the use of passenger.
- SM will see that all is right for the train to proceed.
- For suburban train permission of SM for starting train may be dispensed with
- In such station (suburban section) or, where no SM is posted the guard shall see, all is right before giving all right signal.
- At terminal station, junction station. or engine changing station with a halt of 10 minutes or more a warning bell shall be sounded 5 minutes before the starting time of a passenger train.

Q. (62) What are the rules for protection of train stopped in mid section?

The following actions are to be taken for protecting the train stopped in mid-section:-

- (1) When the Loco Pilot knows about any of the following circumstances, he shall switch "ON" the Flasher Light and dim the Head Light:-
 - (a) Sudden jerk with drag and/or drop in air pressure or vacuum of the train.
 - (b) Sudden increase in air flow indicator reading.
 - (c) Train parting or derailment of the train.
 - (d) Any situation warranting protection of the adjoining track.
- (2) When the train is stopped in mid-section or between stations due to accident, failure, obstruction or any other reason and the train is unable to proceed ahead; the Loco Pilot shall immediately switch "ON" the Flasher Light and switch "OFF" the Head Light of the Engine to attract the attention of the Driver of a train approaching from the opposite direction.
- (3) The Driver shall sound "Four Short" whistles (0 0 0 0) repeatedly and display Red hand signal Flag during day light and Red hand signal Light during night, thick, foggy, tempestuous weather impairing visibility or in long tunnels, to appraise/warn the Guard about his inability to proceed.
- (4) Hearing the four short whistle (0 0 0 0) and observing Red hand signal displayed from the engine, the Guard shall acknowledge it by waving a Red hand signal Up & Down vertically.
- (5) The Loco Pilot shall acknowledge the Guard's signal by sounding a long whistle.
- (6) Then the Guard shall check up and ensure that the Tail Board or Tail Lamp (LVI) is correctly exhibited towards the rear.
- (7) The Guard shall lit a Flashing Amber Light instead of Red light of the Tail Lamp to indicate obstruction on track during night, thick, foggy, tempestuous weather impairing visibility or in long tunnels.
- (8) Then the Guard and the Loco Pilot shall take immediate action to protect the train in the front and the rear as per rule.
- (9) Before proceeding to protect the train the Guard shall –
 - (a) Tie a Red hand signal flag to a side lamp bracket or to the hand rail during day light, or
 - (b) Tie a Red hand signal lamp with the side lamp bracket or with the hand rail showing Red light towards the engine during night, thick, foggy, tempestuous weather impairing visibility or in long tunnels.
 - (c) Reverse one of his brake van side lamp slides to show Red light towards the engine and White light towards the rear during night, thick, foggy, tempestuous weather impairing visibility or in long tunnels.
- (10) The Driver and the Guard shall protect the train in the following manner :-

(A) On single line section or when TSL working is in force on double or multiple line section :-

- (i) The Guard himself or sending a competent railway servant, shall place four (4) detonators on the track in rear of the train. One detonator shall be placed at 600 meters from the train and three detonators at 1200 meters about 10 meters apart from the last vehicle of the train or place of obstruction.
- (ii) Then the Guard shall confirm from the Loco Pilot through walkie-talkie or any means of communication that the train is protected in front of the engine in the same manner.
- (iii) The Guard or the person going back to protect the train shall display stop hand signal continuously towards the rear, remaining at a distance of 45 metres in rear of the last detonator placed, until he is recalled.
- (iv) In absence or failure of communication system the Guard shall go to the Loco Pilot personally to confirm the protection of train in front.
- (v) The Loco Pilot of the train either by going himself or by sending his Assistant Driver or any other competent railway servant, shall protect the train in front in the same manner by placing four (4) detonators. One detonator shall be placed at 600 meters from the and three detonators at 1200 meters about 10 meters apart.

(B) On double line section with unidirectional traffic :-

- (i) The Loco Pilot of the train either by going himself or by sending his Assistant Loco Pilot or any other competent railway servant, shall protect the adjacent line in front. First detonator shall be placed at 600 meter & three detonators at 1200 meters about 10 meters apart.
- (ii) The Guard shall himself first immediately proceed ahead to assist and ensure protection of the adjacent line in front in the same manner mentioned above.
- (iii) When the Guard finds that the adjacent line is not obstructed, the Guard shall consult with the Loco Pilot and go back to protect the train in rear in the aforesaid manner, if he has not already sent another competent person for this purpose.

(C) On multiple line section with unidirectional traffic on the nominated lines :-

- (vi) The Loco Pilot or Assistant Loco Pilot or competent railway servant shall protect the adjacent line/ lines in front in the aforesaid manner. One detonator shall be placed at 600 meters and three detonators at 1200 meters about 10 meters apart.
- (i) The Guard shall protect first the adjacent line, in rear, on which trains normally run in the direction of the affected train, in the manner mentioned above.
- (ii) Thereafter the Guard shall proceed ahead to assist and ensure protection of the obstructed adjacent line/lines in front on which trains normally run in the opposite direction.

(D) In absolute block system of working during total interruption of communication on single line & double line :-

The train shall be protected by placing three (3) detonators at a distance of 250 — 250 — 10 meters, from the place of obstruction, adopting above mentioned procedure.

(E) In automatic block system of working :-

- (i) The line on which the train is standing shall be protected in rear by placing three (3) detonators at a distance of 90 — 90 — 10 meters from the place of obstruction.

- (ii) The adjacent line shall be protected by placing four (4) detonators. One detonator shall be placed at 600 meters and three detonators at 1200 meters about 10 meters apart.
- (iii) During failure of all signals or a series of signals the line shall be protected by placing four (4) detonators. One detonator shall be placed at 600 meters and three detonators at 1200 meters about 10 meters apart.
- (iv) During total failure of all signals and all means of communications, the train shall be protected by placing three (3) detonators at a distance of 250 — 250 — 10 meters from the place of obstruction, adopting above mentioned procedure.

(F) When train are worked on block ticket :-

The train shall be protected by placing three (3) detonators at a distance of 250 — 250 — 10 meters from the place of obstruction, adopting above mentioned procedure.

- (11) In case of EMU trains :-
 - (i) Motorman shall sound the Bell four times instead of sounding the whistle.
 - (ii) Guard shall acknowledge the same by ringing the bell four times.
 - (iii) If the Guard does not acknowledge the bell within a reasonable time, the Motorman must take efforts to contact with the Guard with the assistance of persons available.
 - (iv) The Guard shall immediately switch “ON” the Flasher light in rear.
 - (v) The Motorman and the Guard shall protect the train in prescribed manner mentioned above.
- (12) When the obstruction is removed, the Loco Pilot shall re-call the Guard or the competent railway servant sent to protect the train, by giving a long continuous whistle.
- (13) When the Guard or the person deputed by him is re-called, he shall leave down the three (3) detonators, and on his way back pick up the intermediate detonator.
- (14) Then the Guard shall remove the hand signal flag or lamp from the side lamp bracket or hand rail and put back the side lamp slide to its normal position.
- (15) Thereafter, the Guard shall give starting signal to the Loco Pilot.
- (16) Receiving the starting signal from the Guard, the Loco Pilot shall exchange all right signal with him and start the train.
- (17) If it is not possible to exchange signals due to curvature, obstruction or any other reason, the Loco Pilot shall start the train on getting verbal permission from the Guard through his Assistant Loco Pilot.

Q.(63) What are the duties of staff in case of fire on train?

The following actions are to be taken when the train or vehicle catches fire:-

(A) When Coaching train or vehicle catches fire :-

- (1) Noticing the train catches fire, the Guard shall take immediate action to stop the train.
- (2) The train shall be stopped near the source of water clearing the tunnels, bridges, platform sheds, buildings associated with the line concerned etc. in such a manner that the affected vehicle may remain nearest to the source of water like river, pond, canal, water tank etc.
- (3) The Guard shall immediately disconnect the supply of electricity.
- (4) The Guard shall take immediate action to save the life of passengers, live stock and Mail bags.
- (5) The Guard shall arrange to detrain the passengers & live stock immediately and render first aid to the injured passengers.

- (6) Then the affected vehicle catches fire shall be so isolated that the vehicle may remain at a distance not less than 45 meters from the unaffected vehicles.
 - (7) If the incident occurred in mid-section and the train is not protected by fixed stop signal, the Guard shall protect the train as per rule (GR 6.03, GR 9.10 and SRs thereto).
 - (8) Then every possible action shall be taken by the Guard with the help of passengers, villagers, railway staff, volunteers etc. to extinguish fire.
 - (9) Water, earth, sand and fire extinguishers are to be used to extinguish fire promptly.
 - (10) Water shall not be used if the fire breaks out due to electric short circuit.
 - (11) The assistance of fire brigade may be obtained to extinguish fire, if available nearby.
 - (12) The fire brigade shall be allowed to work only after ensuring that the electric supply in OHE is already made dead in electrified sections.
 - (13) The Guard shall send a message to the Station Master of either end of the block section regarding the occurrence by using any means of communication and also intimate about the assistance required.
 - (14) In spite of all endeavour, if the fire cannot be extinguish, the Guard shall allow to burn the affected vehicle.
 - (15) The burnt vehicle shall not be utilized further until written certificate intimating that the vehicle is fit to run is obtained from the TXR and clearance certificate received from the police official in case of wrecking or sabotage or criminal activities.
- (B) **When Goods train or wagon catches fire :-**
 In case of Goods train/wagon catches fire, the following actions in addition to all actions mentioned in Clause (A) above shall be taken:-
- (1) Seal cards and side cards must be preserved.
 - (2) Samples of commodity carried in vehicles must be preserved.
 - (3) Seal cards and side cards of vehicles and samples of commodity or goods must be sent to the DCM and commercial department concerned.

Q.(64) What action will be taken by the staff in case of engine failure in mid-section?

The following actions are to be taken when the train engine failed in mid-section:-

- (1) When the train engine fails, the Loco Pilot shall stop the train immediately and give Four Short whistles.
- (2) Hearing Four Short whistles the Guard shall protect the train immediately as per rule.
- (3) Then the Guard shall contact the Loco Pilot and shall secure the train by applying the hand brakes as per rule, if required.
- (4) Thereafter, the Guard shall contact the Control Office through the portable telephone set and inform the Controller about the circumstances and assistance required and shall also obtain order from the Controller.
- (5) If the portable telephone set is not available or got out of order, the Guard shall arrange to send a written message in this respect to the Station Master either by sending a messenger or through the train passing over the adjacent line after stopping it at the site or by other means.
- (6) The written message, to be sent to the SM through the messenger or train, must signed by the Guard and/or the Loco Pilot.

- (7) Receiving the message from the Loco Pilot and /or the Guard, the Station Master shall arrange to send a relief engine on issue of "Block Ticket" on prescribed Form No. T/A 602 or T/C 912 as the case may be.
- (8) If the engine become disable in mid-section and the Loco Pilot considers that the defect cannot be rectified in 30 minutes, he shall inform the Guard immediately of this fact so that intimation can be sent to the nearest station asking for relief engine / assistance.
- (9) If the Loco Pilot considers that the defect can be rectified within 30 minutes, assistance need not be asked immediately from the station.
- (10) If after passage of 30 minutes the Loco Pilot finds that he is unable to rectify the defect, he shall immediately inform the Guard of this fact so that the nearest station can be informed asking for a relief engine/assistance.
- (11) If the assistance is asked for from the station but before arrival of the relief engine at the site, the Loco Pilot considers that the defect is rectified and he is able to move his train, the Loco Pilot may proceed with his train only after taking following precautions :-
 - (a) The train must run at a walking pace.
 - (b) A competent railway servant either Assistant Loco Pilot or Assistant Guard or other servant must be sent with hand signals and detonators to protect the train in front.
 - (c) The competent railway servant shall proceed on foot keeping a safe distance of at least 400 meters in advance of the train and display hand signal onwards continuously.
 - (d) The Guard himself or any other competent railway servant shall protect the train in rear in same manner as prescribed above.
- (12) Level crossing gate telephone may also be used for conveying message to the Station Master by the Loco Pilot or the Guard, if available.

Q. (65) What action will be taken when an engine is unable to haul the load?

The following actions are to be taken when the engine cannot haul the train or whole load:-

- (1) When the Driver realizes that the train or the whole load cannot be hauled by his engine, he shall stop the train immediately and give four short whistles.
- (2) Hearing Four Short whistles the Guard shall protect the train immediately as per rule and shall contact with the Loco Pilot.
- (3) If the Loco Pilot considers that the train may proceed to the next station only after backing the train upto a certain distance, he may advise the Guard to allow such backing of the train.
- (4) The Guard shall give a written permission to the Loco Pilot to back the train as per rule only after protecting the line, upto which the train is to be backed.
- (5) After backing the train the Loco Pilot & Guard shall try to proceed to the next station at a single run.
- (6) If the Loco Pilot & the Guard considers that the engine cannot haul the whole load even after backing, the train shall be protected and hand brakes applied by the guard as per rule and vehicles are to be secured by him.
- (7) If the engine is capable of proceeding onward either alone or with some vehicles, the Guard shall take action to send the engine either alone or with some vehicles to the next station.
- (8) Before uncoupling the engine or the vehicle, the Guard shall ensure that the hand brakes of remaining portion of the train are applied and vehicles are secured properly so that the remaining portion may be kept stationary.

- (9) Thereafter, the Guard shall issue a written permission/authority to the Driver on prescribed Form No. T- 609 authorizing the Loco Pilot to uncouple the vehicle or engine from the train and proceed to the next station with or without vehicle attached.
- (10) The Guard may authorize the Loco Pilot on that authority T- 609 to return the same engine to the same line to clear the remaining portion of the train, if the Guard considers that the engine is fit to do so.
- (11) Before handing over the authority T- 609, the Guard must have to collect the "Tangible Authority to Proceed" from the Loco Pilot and it shall be kept in his safe custody until the whole of the train or all vehicles have cleared the block section.
- (12) The Guard shall endorse the number of the last vehicle allowed with the front portion of the divided train, in the written authority T- 609 but Last Vehicle Indicator shall not be affixed in the rear of that last vehicle.
- (13) At night or in thick, foggy or tempestuous weather impairing visibility, as soon as the engine with or without vehicle attached is drawn forward, the Guard shall take following actions :-
 - (a) Protect the remaining portion of the train in front also as per rule.
 - (b) Affix a Red light on the front / leading vehicle of the remaining portion of the train.
 - (c) After sending the engine, the Guard shall remain at a distance of 45 meters from the last detonator placed in rear of the train and continuously display stop hand signal towards the rear until the same engine returns or any other engine arrives at the site to clear the remaining portion of the train.
- (14) While proceeding to the next station, the Loco Pilot shall sound "One Long One Short One Long One Short" (— 0 — 0) whistles constantly to appraise/inform the Station Master that the train is incomplete.
- (15) If "Token" is the "Authority to Proceed" for the said train, all the portions of the train may be admitted at the station directly by taking "Off" signals.
- (16) If the station is provided with Token less Block Instrument or train is worked on Paper Line Clear Ticket or other written authority to proceed, the front portion of the train except the last portion must be stopped outside the First Stop Signal and then it shall be Piloted-in on issue of written authority on prescribed form T- 369(3b) or T- 509 as the case may be.
- (17) The last portion of the train shall be admitted directly by taking "Off" signals.
- (18) The Guard shall sign in Complete Arrival Register on prescribed Form No. T- 1410 after complete arrival of the last portion of the train at the station and shall hand over the tangible authority to proceed to the Station Master.
- (19) In case of emergency the rear portion of the train may be cleared by pulling it to the station in rear also.

Q. (66) What are the duties of LP and Gd. in case of train parting?

The following actions are to be taken when train parting is occurred during run:-

- (1) The Loco Pilot of the train shall understand that the train parting is occurred when there is sudden acceleration with the train.
- (2) The Guard of the train shall understand that the train parting is occurred when there is sudden deceleration with the train.
- (3) Being assured that train parting is occurred, the Loco Pilot shall sound "One Long One Short One Long One Short" (— 0 — 0) whistles constantly to appraise/inform the Guard and keep the front portion on motion until the rear portion is stopped.

- (4) The Guard shall display hand signal to the Loco Pilot by waving a Green Flag by day and White Light by night in repeated motions up and down vertically to indicate train parting and to keep the front portion on motion.
- (5) The Guard shall never display Stop hand signal to the Loco Pilot until the rear portion of the train finally come to a stand.
- (6) Then the Guard shall apply the hand brake to stop the rear portion of the train.
- (7) If there is any assisting engine attached in rear of the train, the Loco Pilot of the assisting /banking engine also sound "One Long One Short One Long One Short" (— 0 — 0) whistles and apply brake to stop the rear portion of the train.
- (8) The Guard shall exhibit stop hand signal to the Loco Pilot immediately after stopping the rear portion for stopping the front portion also.
- (9) Immediately after stoppage of rear portion, the Guard shall protect the rear portion of the train on both front and rear and also secure the vehicles and apply hand brakes as per rule to make the rear portion stationary.
- (10) If the train has banking engine attached, the Loco Pilot of the banking engine shall protect in rear and Guard shall protect in front of the rear portion of the train.
- (11) The rear portion of the train shall not be moved until the train engine returns or a relief engine arrives to clear the said portion.
- (12) If both the front and rear portion stops within the sight of each other, they shall be coupled together with great caution after taking precautions, if such coupling is possible and safe.
- (13) If coupling is not possible, the Guard shall allow the front portion to the next station.
- (14) If the front portion of the parted train has already reached the next block station before the train could stop, the Loco Pilot shall sound "One Long One Short One Long One Short" (— 0 — 0) whistles to appraise the Station Master that the train is incomplete and shall not surrender/hand over the tangible authority to proceed to the Station Master until the rear portion of the train clears the block section.
- (15) When the rear portion is arrived complete and block section is cleared, the Guard shall sign in Complete Arrival Register on prescribed Form No. T- 1410 and surrender the tangible authority to proceed to the Station Master.

Q. (67) What are the rules for Temporary Single Line (TSL) working on D/L in case of obstruction of one line in absolute block section?

In case of obstruction of one line on double line section, the SM shall stop the train at the station and inform the Loco Pilot & Guard about the circumstances.

- (1) Trains may be worked on introducing Temporary Single Line working under any one of the following system —
 - (a) By obtaining line clear through electric speaking instrument.
 - (b) By installation of Single Line Block Instrument and SLB demarcating the block section in the wrong direction of the affected line if the obstruction is likely to remain for a substantial period.
- (2) The SM who desires to introduce TSL working must get reliable information in writing that the other line is clear and free from all obstructions either from Loco Pilot or Guard or JE/SE/SSE (P-WAY) or JE/SE/SSE (TRD).
- (3) If there is any doubt whether the said line is clear or not, the line must be inspected by the JE/SE/SSE (P-WAY) and a written certificate is issued to the SM.

- (4) If the SM does not receive any written information from the Loco Pilot or Guard or JE/SE/SSE (P-WAY) or JE/SE/SSE (TRD), the Station Master shall consult with the Section Controller, and may allow only one non-passenger carrying train or a light engine to run over wrong line on issue of a Block Ticket (T/A-602) without introducing TSL working.
- (5) After receiving written information, the SM shall consult with the Section Controller and the SM of the block station in advance to introduce TSL working.
- (6) Then the SM shall obtain Section Controller's Order for introducing TSL working.
- (7) Both the Station Masters intend to introduce TSL working shall ensure that —
 - (a) The TSL working shall be introduced between the nearest stations having cross over between both Up and Down line on either side of the obstruction.
 - (b) If there is any "C" class station or IBP, the working of that "C" class station will be closed.
 - (c) The block instruments of all the stations including "C" class station, among which TSL working is to be introduced shall be kept at "Train On Line" position for both the affected and unaffected line throughout the period the TSL working remain in force.
 - (d) In case of Diado Type Single Line Block Instrument, provided in multiple line section, a Caution Indicator shall be hung.
 - (e) The signals at the Block Hut shall be kept in the "ON" position and it shall be passed by the Loco Pilot at "ON" on receipt of a written authority.
- (8) After ascertaining that the line is clear, both the Station Masters shall exchange messages between themselves supported by Private Number, intimating the —
 - (a) Cause of introduction of TSL working.
 - (b) Line on which TSL working will be introduced.
 - (c) Source of information that the said line is clear.
 - (d) Place of obstruction.
 - (e) Speed restrictions if any.
 - (f) Intermediate "C" class station which is to be closed.
 - (g) Trap point set and locked.
 - (h) Stop signal which is to be passed at "ON".
 - (i) Last train which arrived or left on the line.
- (9) Then the SM proposing TSL working shall obtain line clear from the station in advance using any one of the following telephones —
 - (a) Telephone attached with block instrument. Or
 - (b) Station to Station or Inter-Cabin group telephone. Or
 - (c) Railway auto-phone. Or
 - (d) BSNL fixed telephone. Or
 - (e) Control telephone. Or
 - (f) VHF sets.
- (10) The SM shall obtain Line clear under exchange of Identification Number and supporting by Private No. shall issue a written authority to the Loco Pilot on prescribed form no T/D – 602 that includes —
 - (a) Line Clear Ticket.
 - (b) Authority to pass Last Stop Signal at "ON".
 - (c) Caution Order which shall contain the following information:-
 - (a) Line on which it is to run,
 - (b) Km of obstruction,
 - (c) any restriction of speed,
 - (d) assurance that the Trap point (if any) is set, clamped and padlocked.

- (e) Driver shall give frequent whistle to warn the Gangmen & Gatemen working on line.
- (11) The speed of the First train shall not exceed 25 Kmph in any circumstances. The speed of the Second & Subsequent trains may be normal speed subject to other speed restrictions.
- (12) If the train is allowed to run over wrong line —
 - (a) At the dispatching station —
 - (i) Set all concerned points for the nominated route and lock all concerned facing points by clamps & padlocks.
 - (ii) Authority to pass all departure stop signals at “ON” position shall be issued on T/D-602 itself.
 - (iii) Train entering block section report shall be given accordingly to the SM.
 - (b) At the receiving station —
 - (i) The Driver shall stop his train at the Last Stop Signal of the wrong line or First Stop Signal of the right line whichever comes across first.
 - (ii) SM shall depute a competent railway servant at the said FSS or LSS concerned to stop the train.
 - (iii) Set all concerned points for the nominated route and lock all concerned facing points by clamps & padlocks
 - (iv) The train shall be piloted in on issue of written authority T-509.
 - (v) SM shall ensure complete arrival of train by receiving signature of Guard on T-1410.
 - (vi) SM shall give train out of block section report supported by a Private No. to the SM of block station in rear.
- (13) If the train is allowed to run over right line —
 - (a) At the dispatching station —
 - (i) Set all concerned points for the nominated route and lock all concerned facing points.
 - (ii) All departure stop signals except Last Stop Signal shall be taken “Off”.
 - (iii) SM shall give “Train Entering Block Section” report to the SM of block station in advance.
 - (b) At the receiving station —
 - (i) The Driver shall obey the aspect of the First Stop Signal.
 - (ii) SM shall admit the train by taking “Off” relevant reception signals.
 - (iii) SM shall ensure complete arrival of train by receiving signature of Guard on T-1410.
 - (iv) SM shall give “Train out of Block Section” report supported by a Private No. to the SM of block station in rear.
- (14) During run the Loco Pilot shall give frequent whistle to warn the Gangmen & Gatemen working on line regarding introduction of TSL working.
- (15) If the train runs over the wrong line, the Loco Pilot shall lit the flasher light.
- (16) **Resumption of normal working:-**
 - (a) SM shall receive a written certificate from a responsible official intimating that the obstruction is removed and the track is free and safe for the passage of the train,
 - (b) The SM shall convey the message to the SM at the other end under exchange of private number.
 - (c) The SM shall consult with the Section Controller and obtain his consent to resume normal working.
 - (d) When normal working is resumed, the working of Block Instrument, fixed signals, block huts etc. shall be resumed immediately.

- (e) In TSR the SM shall write the time of suspension of double line working, the time of introducing TSL working and the time of resuming normal working.
- (f) The Loco Pilot of the first train entering the section after normal working is resumed shall inform all Gatemen and Gangmen on the way about the resumption of normal working.
- (17) All records in connection with the **TSL** working shall be retained at the station and the Transportation Inspector of the section must scrutinize them and submit his report to the Divisional Railway Manager within 7 days of the resumption of normal working.

Q. (68) What are the rules for working of train during total interruption of communication on double line in absolute block system?

- (1) In case of total interruption of communication on double line section, the SM shall stop the train at the station and inform the Loco Pilot & Guard about the circumstances.
- (2) During total interruption of communication between two stations Line Clear cannot be obtained through any one of the following means —
 - (a) Block Instrument or Axle counter or Track Circuit. Or
 - (b) Telephone attached with block instrument. Or
 - (c) Station to Station or Inter-Cabin group telephone. Or
 - (d) Railway auto-phone. Or
 - (e) BSNL fixed telephone. Or
 - (f) Control telephone. Or
 - (g) VHF sets.
- (3) The SM shall issue a written authority to the Loco Pilot of all trains on prescribed Form No. T/C-602 to run during total interruption of communication.
- (4) Form No. T/C-602 includes —
 - (a) An authority to proceed without line clear.
 - (b) An authority to pass last stop signal at “ON” position.
 - (c) A Caution Order. Speed of all trains shall be restricted to 25/10 Km/h (25-on straight and when view clear, 10-When view ahead is not clear due to curve, obstruction, rain, fog or any other cause).
- (5) The SM shall set all concerned points for the nominated route and lock all concerned facing points.
- (6) The SM shall dispatch the train by taking “Off” departure signals except the Last Stop Signal.
- (7) The SM at the station in advance shall admit the train by taking “Off” reception signals only after stopping the train outside the First Stop Signal.
- (8) Subsequent train may be allowed after a clear interval of 30 minutes.
- (9) The Loco Pilot shall sound frequent whistle during run.
- (10) Before entering into the tunnel the Driver shall ensure that the tunnel is clear from all obstruction.
- (11) Before entering into the tunnel it shall be ensured that Headlight, Sidelights and Tail Lights etc. are lit.
- (12) In case of any doubt, whether the tunnel is clear from all obstruction or not, the train should be piloted by a railway employee.
- (13) When the train is stopped in the block section due to any accident, failure, obstruction or other exceptional cause :
 - (a) The Loco Pilot shall sound four short whistles to apprise the guard about the fact.
 - (b) The Guard shall immediately exhibit a hand danger signal towards the rear.

- (c) The Guard shall check up and ensure that the tail board/tail lamp is correctly exhibited.
- (d) The Guard shall protect the train in rear by placing 3 detonators at a distance of 250—250—10 meters from the train.
- (14) No train shall be backed in midsection except under unavoidable circumstances.
- (15) In exceptional circumstances, if backing is to be done, the train first be protected by placing three detonators at a distance of **250-250-10 m** from the place up to which backing is required.
- (16) While approaching the station ahead, the Loco Pilot shall sound continuous whistle to warn the SM and shall stop the train at the First Stop Signal.
- (17) When train detains outside the First Stop Signal but neither the signal takes "Off" nor any station staff turns up to pilot the train and the detention exceeds or is likely to exceed 10 minutes, train to be protected by placing three detonators at a distance of **250-250-10 m** and ALP to be send to the station/cabin to inform the SM.
- (18) Arriving at the next station, the Loco Pilot shall hand over the authority T/C-602 to the SM who shall keep it in his safe custody for further inspection.
- (19) Record of all trains run over the block section on the authority T/C-602 shall be maintained in TSR at both stations.
- (20) Trains must continue to work on this system until any one means of communication is restored by the competent authority.
- (21) When communication restores, the SM must send message of restoration to the SM at other end under exchange of Private No. and shall record it on T/I-602.
- (22) Before Granting or Obtaining Line Clear for a train, both the SM shall ascertain the timings of arrival & departure of all trains and complete arrival of the last train.
- (23) The Section Controller shall be intimated accordingly if communication is restored with the Controller.
- (24) All records in connection with the working of train during "**Total Interruption of Communication**" shall be retained at the station and the Transportation Inspector of the section must scrutinize them and submit his report to the Divisional Railway Manage within 7 days of the resumption of normal working.

Q.(69)What are the rules for working of train during total interruption of communication on single line in absolute block system?

- (1) In case of total interruption of communication on single line section, the SM shall stop the train at the station and inform the Loco Pilot & Guard about the circumstances.
- (2) During total interruption of communication between two stations Line Clear cannot be obtained through any one of the following means :
 - (a) Block Instrument or Axle counter or Track Circuit. Or
 - (b) Telephone attached with block instrument. Or
 - (c) Station to Station or Inter-Cabin group telephone. Or
 - (d) Railway auto-phone. Or
 - (e) BSNL fixed telephone. Or
 - (f) Control telephone. Or
 - (g) VHF sets.
- (3) The SM shall arrange to open communication with the next block station by sending a vehicle.

- (4) The SM shall explain the working procedure to the concerned staff before sending them to open communication.
- (5) The SM shall send any one of the following in order of preference for Opening Communication:
 - (a) Train Engine
 - (b) Light Engine
 - (c) Motor Trolley/Tower Wagon duly accompanied by Guard or “off” duty SM.
 - (d) Diesel Car/Rail Motor Car/ Empty EMU Rake etc.
- (6) The SM shall ensure setting & locking of concerned points and taking “Off” departure signals except the Last Stop Signal.
- (7) The SM shall issue “An authority to for opening of communication during total interruption of communication on single line” on prescribed **Form No. T/B-602** which includes the following :
 - (a) Authority to Proceed Without Line Clear.
 - (b) Authority to Pass Last Stop Signal at “ON”.
 - (c) Caution Order. Speed shall not exceed 15/10 Kmph.
 - (d) Line Clear Enquiry Message — for the train waiting for line clear or expected to arrive at the station.
 - (e) Conditional Line Clear Message — giving line clear supported by Private No. for return journey of the vehicle sent for opening communication.
- (8) If one Light Engine or Light Engine with Brake Van is to be dispatched to proceed to the next station and continue its journey onwards and is not meant for opening communication, **Form No. T/B-602** shall be issued but “Line Clear Enquiry Message” & “Conditional Line Clear Message” shall not be applicable.
- (9) The SM shall not obstruct the line outside the outermost facing point after dispatching the vehicle for opening communication till the vehicle returns.
- (10) If the two vehicles of opposite direction meet at midsection, the Loco Pilot & Guard of both vehicles shall jointly decide the station to which they shall proceed considering the importance of train, proximity of block section, gradient in the section and presence of catch siding and shall proceed after coupling the vehicles or keeping safe distance between themselves.
- (11) The Loco Pilot shall stop the train at the first stop signal of the next station and sound a long continuous whistle to warn the SM.
- (12) The SM shall admit the vehicle or vehicles either by taking off signals or by piloting in.
- (13) The Loco Pilot shall hand over **Form No. T/B-602** to the SM who shall keep it in his safe custody.
- (14) The SM shall return the vehicle alone or attaching the vehicle with another vehicle or train as per the **Conditional Line Clear Message** received.
- (15) The SM shall issue the following documents to the Loco Pilot of vehicle for return journey—
 - (a) Conditional Line Clear Ticket on prescribed Form No. T/G-602(UP) or T/H-602(DN).
 - (b) Authority to Pass Last Stop Signal at “ON” on prescribed Form No. T-369(3b).
 - (c) Caution Order on prescribed Form No. T-409. The vehicle shall run at a normal speed.
 - (d) Line Clear Enquiry Message on prescribed Form No. T/E-602 for trains waiting at the station.
 - (e) Conditional Line Clear Reply Message on prescribed Form No. T/F-602 with Private No.

- (16) The Loco Pilot or the returning vehicle shall stop the train at the first stop signal of the base station and sound a long continuous whistle to warn the SM.
- (17) The SM shall admit the returning vehicle either by taking off signals or by piloting in.
- (18) The Loco Pilot shall hand over Conditional Line Clear Reply Message to the SM.
- (19) After opening of communication the SM shall issue the following documents to the Loco Pilot of all trains for which line clear obtained :
 - (a) Conditional Line Clear Ticket on prescribed Form No. T/G-602(UP) or T/H-602(DN).
 - (b) Authority to Pass Last Stop Signal at "ON" on prescribed Form No. T-369(3b).
 - (c) Caution Order on prescribed Form No. T-409. The First train allowed after opening communication shall run at a normal speed. The speed of the second & subsequent trains shall not exceed 25/10 Kmph.
 - (d) The Guard or Loco Pilot of every last train allowed after opening communication shall be issued **Form No. T/E-602 & T/F-602**, if required, along with the above documents.
- (20) Subsequent trains may be allowed to run in following of one another keeping a clear interval of 30 minutes between two successive trains.
- (21) When the train is stopped in the block section due to any accident, failure, obstruction or other exceptional cause:
 - (a) The Driver shall sound four short whistles to apprise the guard about the fact.
 - (b) The Guard shall immediately exhibit a hand danger signal towards the rear.
 - (c) The Guard shall check up and ensure that the tail board/tail lamp is correctly exhibited.
 - (d) The Guard shall protect the train in rear by placing detonators at a distance of 250—250—10 meters from the train.
 - (e) The Driver shall protect the line in front by placing detonators at a distance of 250—250—10 meters from the train.
- (22) No train shall be backed in midsection except under unavoidable circumstances.
- (23) In exceptional circumstances, if backing is to be done, the train first be protected by placing three detonators at a distance of **250-250-10 m** from the place up to which backing is required
- (24) While approaching the station ahead, the Driver shall sound continuous whistle to warn the SM and shall stop the train at the First Stop Signal.
- (25) When train detains outside the First Stop Signal but neither the signal takes "Off" nor any station staff turns up to pilot the train and the detention exceeds or is likely to exceed 10 minutes, the train shall be protected in rear and the ALP shall be deputed to inform the SM.
- (26) Arriving at the station, the Loco Pilot shall hand over all the documents to the SM who shall keep it in his safe custody for further inspection.
- (27) Record of all trains run over the block section on the authority of T/B-602 & T/G-602 or T/H-602 shall be maintained in TSR at both stations.
- (28) Trains must continue to work on this system until any one means of communication is restored by the competent authority.
- (29) When communication restores, the SM must send message of restoration to the SM at other end under exchange of Private No. and shall record it on T/I-602.

- (30) Before Granting or Obtaining Line Clear for a train, both the SM shall ascertain the timings of arrival & departure of all trains and complete arrival of the last train.
- (31) The Section Controller shall be intimated accordingly if communication is restored with the Controller.
- (32) All records in connection with the working of train during **“Total Interruption of Communication”** shall be retained at the station and the Transportation Inspector of the section must scrutinize them and submit his report to the Divisional Railway Manager within 7 days of the resumption of normal working.

Q. (70) What are the rules for working of trains during obstruction of one line and when means of communication are not available on double line in absolute block system?

- (1) In case of obstruction of one line on double line section during total interruption of communication, the SM shall stop the train at the station and inform the Loco Pilot & Guard about the circumstances.
- (2) Trains may be worked on introducing Temporary Single Line working only after receiving reliable information in writing from the Engineering Official not below the rank of JE/SE/SSE(P-WAY) intimating that another line on which TSL working is to be introduced is clear and safe for passage of trains.
- (3) The Engineering Official shall give written certificate to the SM of the station for which the unobstructed line is the right line for dispatching trains.
- (4) On Receipt of this certificate the SM **(of the station for which the unobstructed line is the right line for dispatching trains)** shall arrange to open communication with the next block station by sending a vehicle for working of trains by introducing TSL working.
- (5) The SM shall explain the working procedure to the concerned staff before sending them to open communication.
- (6) The SM shall send any one of the following vehicle for Opening Communication:
 - (a) Train Engine
 - (b) Light Engine
 - (c) Motor Trolley/Tower Wagon duly accompanied by Guard or “off” duty SM.
 - (d) Diesel Car/Rail Motor Car/ Empty EMU Rake etc.
- (7) The SM shall ensure setting & locking of concerned points and taking “Off” departure signals except the Last Stop Signal if the train runs in right direction.
- (8) If the train runs in right direction, facing points shall be clamped & padlocked and departure signals shall not be taken ‘Off’ for trains.
- (9) The SM shall issue “An authority to for opening of communication during total interruption of communication on single line” on prescribed **Form No. T/B-602** which includes the following :
 - (a) Authority to Proceed Without Line Clear.
 - (b) Authority to Pass Last Stop Signal at “ON”.
 - (c) Caution Order. Speed shall not exceed 15/10 Kmph.
 - (d) Line Clear Enquiry Message — for the train waiting for line clear or expected to arrive at the station.
 - (e) Conditional Line Clear Message — giving line clear supported by Private No. for return journey of the vehicle sent for opening communication.
- (10) The SM shall not obstruct the line outside the outermost facing point after dispatching the vehicle to opening communication till the vehicle returns.
- (11) The Driver shall stop the train at the first stop signal of the next station and sound a long continuous whistle to warn the SM.

- (12) The SM shall admit the vehicle or vehicles either by taking off signals or by piloting in.
- (13) The Driver shall hand over **Form No. T/B-602** to the SM who shall keep it in his safe custody.
- (14) The SM shall return the vehicle alone or attaching the vehicle with another vehicle or train as per the **Conditional Line Clear Message** received.
- (15) The SM shall issue the following documents to the Driver of vehicle for return journey:
 - (a) Conditional Line Clear Ticket on prescribed Form No. T/G-602 or T/H-602.
 - (b) Authority to Pass Last Stop Signal at "ON" on prescribed Form No. T-369(3b).
 - (c) Caution Order on prescribed Form No. T-409. The vehicle shall run at a normal speed.
 - (d) Line Clear Enquiry Message on prescribed Form No. T/E-602 for trains waiting at the station.
 - (e) Conditional Line Clear Reply Message on prescribed Form No. T/F-602 with Private No.
- (16) The Loco Pilot of the returning vehicle shall stop the train at the First Stop Signal pertaining to right line or at the Last Stop Signal pertaining to wrong line of the base station and sound a long continuous whistle to warn the SM.
- (17) The SM shall admit the returning vehicle.
- (18) The Loco Pilot shall hand over Conditional Line Clear Reply Message to the SM.
- (19) After opening of communication the SM shall issue the following documents to the Loco Pilot of all trains for which line clear obtained:
 - (a) Conditional Line Clear Ticket on prescribed Form No. T/G-602 or T/H-602.
 - (b) Authority to Pass Last Stop Signal at "ON" on prescribed Form No. T-369(3b).
 - (c) Caution Order on prescribed Form No. T-409. The First train allowed after opening communication shall run at a normal speed. The speed of the second & subsequent trains shall not exceed 25/10 Kmph.
 - (d) The Guard or Loco Pilot of every last train allowed after opening communication shall be issued **Form No. T/E-602 & T/F-602**, if required, along with the above documents.
- (20) Subsequent trains may be allowed to run in following of one another keeping a clear interval of 30 minutes between two successive trains.
- (21) When the train is stopped in the block section due to any accident, failure, obstruction or other exceptional cause —
 - (a) The Loco Pilot shall sound four short whistles to apprise the guard about the fact.
 - (b) The Guard shall immediately exhibit a hand danger signal towards the rear.
 - (c) The Guard shall check up and ensure that the tail board/tail lamp is correctly exhibited.
 - (d) The Guard shall protect the train in rear by placing detonators at a distance of 250—250—10 meters from the train.
 - (e) The Loco Pilot shall protect the line in front by placing detonators at a distance of 250—250—10 meters from the train.
- (22) No train shall be backed in midsection except under unavoidable circumstances.
- (23) Backing of train can be done only after making protection of line in rear of the place upto which the train is to be backed.

- (24) When train detains outside the First Stop Signal but neither the signal takes "Off" nor any station staff turns up to pilot the train and the detention exceeds or is likely to exceed 10 minutes, the train shall be protected in rear and the Assistant Guard or Assistant Driver shall be deputed to inform the SM.
- (25) Arriving at the station, the Driver shall hand over all the documents to the SM who shall keep it in his safe custody for further inspection.
- (26) Record of all trains run over the block section on the authority of T/B-602 & T/G-602 or T/H-602 shall be maintained in TSR at both stations.
- (27) Trains must continue to work on this system until any one means of communication is restored by the competent authority.
- (28) When communication restores, the SM must send message of restoration to the SM at other end under exchange of Private No. and shall record it on T/I-602.
- (29) Before Granting or Obtaining Line Clear for a train, both the SM shall ascertain the timings of arrival & departure of all trains and complete arrival of the last train.
- (30) The Section Controller shall be intimated accordingly if communication is restored with the Controller.
- (31) All records in connection with the working of train during "**Total Interruption of Communication**" shall be retained at the station and the Transportation Inspector of the section must scrutinize them and submit his report to the Divisional Railway Manager within 7 days of the resumption of normal working.

Q. (71) What are the rules for working of trains into an occupied block section on the authority of BLOCK TICKET in absolute block system?

Answer:-

- (1) In case of obstruction on the line, the SM shall stop the train at the station and inform the Loco Pilot & Guard about the circumstances.
- (2) The Station Master may allow trains to work on the obstructed line upto the place of obstruction on the "**Authority of Block Ticket**" in prescribed **Form No. T/A-602**.
- (3) Before sending the train on the "Authority of Block Ticket" (Form No. T/A-602) :
 - (a) The Station Master shall suspend the system of working in force between the affected block stations under exchange of messages supported by Private Number.
 - (b) Both the Station Masters shall obtain concurrence from each other for allowing train on "Block Ticket" and record them in the **Train Signal Register** and **Caution Order Register**.
 - (c) The SM shall correctly set all concerned points of the line over which the train will pass and facing points lock.
 - (d) Departure stop signals except the Last Stop Signal shall be taken "Off", if possible.
- (4) The Station Master shall endorse clearly in detail on the "Block Ticket" (Form No. T/A-602) whether :
 - (a) The train will return to the same station. Or
 - (b) The train will wait at the place of obstruction for arrival and return of another following train. Or
 - (c) The train will proceed to the next station.
- (5) The speed of the train allowed on the "Authority of Block Ticket" (Form No. T/A-602) shall not exceed 15/10 Km/h in any circumstances (15-day/visibility clear, 10- night/visibility not clear).

- (6) During run the Loco Pilot must sound frequent whistle.
- (7) The SM shall give information to the SM of either end when the train leaves his station and enters the obstructed line supported by a Private No.
- (8) The SM shall again give information to the SM of either end when the train returns his station from the obstructed line supported by a Private No.
- (9) After sending a train on Block Ticket (Form No. T/A-602), the SM shall not dispatch another train following the previous train in the same direction unless:
 - (a) The previous Block Ticket is collected and cancelled. Or
 - (b) Necessary endorsement is made on the previous Block Ticket to wait the train at the site for a next train to follow. Or
 - (c) The previous train has met with an accident or has been disabled. Or
 - (d) The Previous Block Ticket is collected from the Loco Pilot by the Official-in-Charge at the site, kept it in his personal custody and he assures the SM over telephone by quoting the serial number of the collected Block Ticket that it will be kept in his custody until another train arrives at the site.
- (10) When the train sent out on the authority of Block Ticket reaches at the place of obstruction, it shall be protected by placing three detonators at a distance of 250—250—10 meters in rear as per rule.
- (11) After completion of work, the Traffic Official-in-Charge at the site shall —
 - (a) Authorize the Loco Pilot to proceed to the station as endorsed on the Block Ticket.
 - (b) In absence of such endorsement on Block Ticket (Form No. T/A-602) —
 - (i) Obtain concurrence over telephone from the SM of the station to which he desires to send the train supported by a Private Number.
 - (ii) Authorize the Loco Pilot to proceed to the desired station endorsing the Private Number on the Block Ticket so received from the SM.
 - (c) Arrange to Couple the trains together, if possible, when there is more than one train at the site, otherwise send them independently in following of one another.
 - (d) Allow the train to run in following of another train from the site of obstruction keeping an interval of 15 minutes between two successive trains.
 - (e) Ensure that the speed of the train allowed in following shall not exceed 8 Kmph.
- (12) The SM shall admit the train either by taking off signals or by piloting in as per rule, when the train approaches to the station from the site obstruction.
- (13) On arrival at the station both the Loco Pilot and the Guard shall endorse the **“time of arrival & that the train has arrived complete and nothing has left in the section”** on the back side of the Block Ticket (Form No. T/A-602) and also shall sign on it.
- (14) After making necessary endorsement and signature the Loco Pilot shall hand over the Block Ticket (Form No. T/A-602) to the Station Master.
- (15) The SM shall then cancel the Block Ticket collected from the Loco Pilot and shall paste it with the concerned Record Foil after cancelling it, if issued from the same station.
- (16) If the Block Ticket is issued from another station, after collection of Block Ticket the SM shall send it to the issuing station for cancellation and record.
- (17) **Resumption of normal working:-**
 - (a) SM shall receive a written certificate from a Loco Pilot or Guard or JE/SE/SSE(P-WAY) or JE/SE/SSE(OHE) intimating that the obstruction is removed and the track is free and safe for the passage of the train,
 - (b) The SM shall convey the message to the SM at the other end under exchange of private number.

- (c) The SM shall consult with the Section Controller and obtain his consent to resume normal working.
 - (d) Then the SM of both stations shall resume the system of working under exchange of messages supported by Private Numbers between themselves.
 - (e) When normal working is resumed, the working of Block Instrument, fixed signals, block huts etc. shall be resumed immediately.
 - (f) In TSR the SM shall write the time of suspension of system of working and the time of resuming normal working.
- (18) On Double Line section during obstruction on one line, when the SM does not receive any written information from the Loco Pilot or Guard or JE/SE/SSE(P-WAY) or JE/SE/SSE(OHE) about the circumstances whether the adjoining line is clear or not, the Station Master shall consult with the Section Controller, and may allow only one non-passenger carrying train or a light engine to run over wrong line on issue of a Block Ticket (T/A-602) without introducing TSL working.
- (19) If the obstruction is likely to stay for a day or more, an Assistant Station Master may be deputed at the site for Line Clear duties.
- (20) In this case trains shall be worked between the station and the site of obstruction as per special instructions issued by Authorized Officer.

Note: In Automatic Block Signalling section, all the above instructions will be followed except, in lieu of prescribed form no-T/A-602, T/C-912 shall be used.

Q. (72) Write down the various system of working in Indian Railways? What are the systems of working are in force in South Eastern Railway?

The following systems of working are in force over Indian Railways: -

1. ABSOLUTE BLOCK SYSTEM,
2. AUTOMATIC BLOCK SYSTEM
3. FOLLOWING TRAIN SYSTEM
4. PILOT GUARD SYSTEM
5. TRAIN STAFF AND TICKET SYSTEM
6. ONE TRAIN ONLY SYSTEM

There are four systems of working enforced in South Eastern Railway:

1. Absolute Block System 2. Automatic Block System 3. One train only system. 4. Train staff and Ticket system.

Q.(73) What are the essentials of absolute block system?

(1) Where trains are worked on the absolute block system:-

- (a) no train shall be allowed to leave a block station unless line clear has been received from the block station in advance, and
- (b) on double lines such line clear shall not be given unless the line is clear , not only upto the first stop signal at block station at which such line clear is given but also for an adequate distance beyond it ;
- (c) on single line such line clear shall not be given unless the line is clear of trains running in the same direction, not only up to the first stop signal at the block station at which such line clear is given but also for an adequate distance beyond it, and is clear of trains running in the direction towards the block station to which such line clear is given.

- (2) Unless otherwise directed by approved special instruction the adequate distance referred to in clauses (b) and (c) of sub-rule (1) shall not be less than –
- (a) 400 meters in case of two aspect lower quadrant signalling or two aspect colour light signalling.
 - (b) 180 meters in case of multiple-aspect signalling or modified lower quadrant signalling.

Q.(74) What are the conditions for granting line clear at class ‘A’ station?

At a class ‘A’ station on single line or double line, the line shall not be considered clear and line clear shall not be given, unless:-

- (a) the whole of the last preceding train has arrived complete;
- (b) all signals have been put back to ‘on’ behind the said train;
- (c) The line on which it is intended to receive the incoming train is clear up to the starter; and
- (d) All points have been correctly set and all facing points have been locked for the admission of the train on the said line.

Q.(75) What are the conditions for granting line clear at class ‘B’ station?

(1) At a class ‘B’ station ‘ON’ double line, the line shall not be considered clear and line clear shall not be given, unless:-

- (a) The whole of the last preceding train has arrived complete inside the outer most facing point or the BSLB, if any.
- (b) All necessary signals have been put back to ‘ON’ behind the said train; and

(c) The line is clear:-

- (i) At station equipped with Two Aspect Signalling up to the Home signal; or
- (ii) At station equipped with Multiple Aspect Signalling or Modified Lower Quadrant signalling up to the outer most facing point or the BSLB.

(2) At a class ‘B’ station on single line the line shall not be considered clear and line clear shall not be given, unless:-

- (a) The whole of the last preceding train has arrived complete;
- (b) All necessary signals have been put back to ‘ON’ behind the said train ; and,

(c) The line is clear:-

(i) At station equipped with Two Aspect Signalling:-

Up to the SLB or advanced starter at that end of the station nearest to the expected train, or
Up to the home signal if there is no SLB or Advanced starter, or
Up to the outermost facing point if there is no SLB or Advanced starter or Home signal;

(ii) at station equipped with Multiple Aspect Signalling or Modified Lower Quadrant signalling:-

Up to the SLB or advanced starter at the end of the station nearest to the expected, or
Up to the outermost facing point if there is no SLB or Advanced starter.

Q.(76) What are the conditions for granting line clear at a class ‘C’ station?

At class ‘C’ station on single line and double line in two aspect, multiple aspect or modified lower quadrant signalling the line shall not be considered clear and line clear shall not be given, unless:-

- (a) The whole of the last preceding train has passed complete at least 400 mtrs. beyond the Home signal and is continuing its journey; and
- (b) All signals taken 'off' for the preceding train have been put back to 'ON' behind the said train;

Provided that on a single line the line is also clear of trains running in opposite direction towards the block hut from the block station at the other end.

Q.(77) What are the rules for obstruction or shunting on double line at a block station when a train is approaching?

1. **Class 'A' Station:** - When line clear has been given, no obstruction shall be permitted outside the home signal or on the line on which it is intended to admit the train, upto the starter pertaining to the said line.
2. **Class 'B' Station:** - When line clear has been given, no obstruction shall be permitted outside the station section but shunting within the station section may go on continuously provided the necessary signals are kept at 'ON'.
3. When signals have been taken 'Off' for an incoming train on to a line which is not isolated no shunting movement shall be carried on towards the points over which the incoming train will pass.

Q.(78) What are the rules observed for obstruction or shunting on double line in the block section?

1. When line clear has been given no obstruction shall be permitted in the block section.
2. Shunting or obstruction for any other purpose shall not be permitted in the block section in rear unless it is clear and is blocked back.
3. Shunting or obstruction for any other purpose shall not be permitted in the block section in advance unless it is clear and the section has been blocked forward.

Provided that when the block section in advance is occupied by a train travelling away from the station, shunting or obstruction may be permitted behind the train under special instructions taking into consideration the speed, weight and brake power of trains and the gradients on the section, and as soon as intimation has been received that the train has arrived at the block station in advance, the line shall be blocked forward if it is obstructed.

Q.(79) What are the rules observed for obstruction or shunting of line on S/L at a class 'A' station when train is approaching?

When line clear has been given, no obstruction shall be permitted outside the Home signal, or on the line on which it is intended to admit the train, upto the starter.

Q.(80) What are the circumstances when line may be obstructed on S/L at a class 'A' station?

The block section shall be obstructed for shunting purposes in following circumstances:-

- (a). When the SM has received line clear from the station at the other end of the block section; or
- (b)When the block section is blocked back; or
- (c)When the block section is occupied by a train travelling away from the block station at which the shunting is to be performed;

Provided that such shunting may be permitted under special instruction taking into consideration the speed ,weight and brake power of trains and the

gradients on the section. As soon as intimation has been received that the train has arrived at the next block station, the section shall be blocked back, and
(d) the LP or other person in-charge of the shunting operation has received distinct order from the SM to shunt as per the SWR .

Q.(81) What are the rules for obstruction or shunting within station section on S/L at 'B' class station?

- (1) If the necessary signal are kept at 'ON' shunting may be carried on within the station section, provided the provision of rule 8.09 are complied with for shunting upto SLB or Advanced starter, where provided.
- (2) When signals have been taken 'OFF' for an incoming train on to the line which is not isolated, no shunting movement shall be permitted towards the points over which the incoming train will pass.

Q.(82) What are the rules for obstruction outside the station section at a class 'B' on S/L in Two Aspect Signalling?

The line outside the station section and upto the Outer signal shall not be obstructed unless a railway servant specially appointed in this behalf by the SM in-charge of the operation, and unless:-

- (a) The block section into which the shunting is to take place is clear of an approaching train and all necessary signals are at 'ON' position, or
- (b) if an approaching train has arrived at the outer signal the SM has personally satisfied himself that the train has been brought to a dead stand at the signal; Provided that the line shall not be obstructed when train has stopped at FSS in thick, foggy or tempestuous weather impairing visibility or when permitted in the SWR.

Q.(83) What are the rules for obstruction of line outside the station section at a class 'B' station on S/L in MOMA signalling?

1. The line outside the station section and up to the first stop signal(Home Signal) shall not be obstructed unless a railway servant specially appointed for this operation by the SM, and
2. the block section into which the shunting is to be performed is clear of an approaching train and section is blocked back, if required.

Q.(84) What are the rules for obstruction of line in the face of an approaching train at a class 'B' station on S/L?

The line outside the home signal in Two Aspect Signalling territory or outermost facing point in Multiple Aspect/ Modified Lower Quadrant signalling territory in the direction of a train for which line clear has been given shall only be obstructed when a SLB or an advanced starter is provided; and

Permitted in the SWR taking into consideration the speed, weight, brake power, the position of the FSS.

Conditions for permitting shunting in the face of approaching train at a class 'B' station on S/L where SLB or advanced starter is provided is as under:-

- (a) Shunting has been authorised by the DSO.
- (b) Shunting can be completed within the period of time fixed by the DSO. Once this limit is crossed shunting will be stopped whether the train due to arrive is in sight or not.
- (c) The shunting is performed between the limits of the SLB or advanced starter.

Q.(85) What are the shunting authorities for shunting in block section?

- (a) Written Authority -T/806
- (b) A Token of prescribed design.

- (c) OCC key, SKB key, SH key(shunting key) -in Token less block instrument in Absolute Block system in single line section.
- (d) Shunting arm of prescribed size and design below LSS.

Q.(86) Write down the essentials of train staff and ticket system.

1. Where train are worked between two stations on the train staff and ticket system:-

- (a) a single train staff shall be kept at one of such station, and
- (b) no train shall start from either of such stations to the other unless the said train staff is at the station from which the train starts and has either been handed to or shown to the LP by the SM when giving such permission.

2. What are the authority to proceed in the train staff and ticket system?

- When only one train is to be sent:- **Train Staff.**
- When more than one train is to be sent:-
Previous trains: Train staff ticket & Staff to be shown
Last Train: Train staff.

3. Conditions for following trains:

- ✓ Max speed 25 kmph.
- ✓ Time interval 15 minutes.
- ✓ LP to be warned, departure time of preceding trains and next stop.

Q.(87) Write TRUE / FALSE.

- a. Train staff and ticket system is adopted for working of trains over SER.
- b. Protection in Train staff and ticket system is done by placing 4 detonators at a distance of 600-600-10-10 m.
- c. When train staff ticket is given to the LP, showing of train staff is not essential.
- d. Time interval between two trains in Train staff and ticket system is 30 mints.

Q.(88) FILL IN THE BLANKS

- a. Authority to proceed in train staff & ticket system is ----- or -----
- b. Time interval between two trains in train staff & ticket system is -----
- c. Maximum speed in train staff and ticket system is -----
- d. Train staff tickets are kept in -----
- e. Protection in train staff and ticket system is done after ----- minutes by placing ----- detonators at the distance of ----- .

Q.(89) Brief about Over Head Equipment.

OHE- Means the electrical conductors over the track together with their associated fittings, insulators and over attachment by means of which they are suspended and registered in position.

Grid substation or sub-station- means an electrical installation inters connected with other and equipped with transfer and switch gear from which power supplied for electric traction.

Feeding post- means a supply control post where the incoming feeder lines from grid substation are terminated.

Sectioning & paralling post (SP)- means a supply control post situated midway between two feeding post at a neutral section and provided with bridging and paralleling interrupters.

SSP- means a supply control post where sectioning and paralleling interrupter are provided.

Elementary section – means the shortest section of overhead equipment which can be isolated from the rest of system by switching operations.

Neutral section- means a short section of insulated and dead overhead equipment which separates the fed by adjacent sub station or feeding posts.

There are three type of neutral section.

- a) Overlap type
- b) Section insulator type
- c) PTFE (Poly Tetra Fluro Ethylene) type.

Blocking of Lines- For maintenance work of P-way & electric traction installations two types of blocks are provided:-

- 1) Traffic block; and
- 2) Power block

Traffic block- means blocking of a track against movement of all traffic.

Power block - means blocking of a section of line to electric traffic only.

Power blocks are of three types:-

- 1) Emergency power block;
 - 2) Pre arrange power block; and
 - 3) Locally arranged power block.
- a) Emergency power block shall be arranged by the TPC immediately on receipt of an advice of any serious breakdown of the OHE or injury to persons or damage to property.
 - b) Pre-arranged power block – means the power block arranged by the TPC for the schedule maintenance of OHE.
 - c) Locally arranged power block – means the power block on the OHE of secondary lines i.e. siding, yard, shed etc. arranged by SM/YM/SSE(Shed). Information will be given to TPC to isolate power supply.

Isolator Switch :-

1. It is operated manually.
2. It is provided to sectionalise OHE into elementary section.
3. Its one key is kept with ATFO and other key with SM.
4. The person operating isolator switch will not operate it unless ordered by the TPC supported by P. No.
5. Before operating this switch TPC shall ensure that corresponding sub-sector is made dead.

Q.(90) DIFFRENTIATE BETWEEN

ELEMENTARY SECTION	NEUTRAL SECTION
<ol style="list-style-type: none"> 1. It is running wire of OHE. 2. It has no types. 3. It has no warning boards. 4. It is provided in one sector with same phase. 	<ol style="list-style-type: none"> 1. It is the dead and insulated wire of OHE 2. It has three types 3. Warning boards are provided 4. It separates two sections of different phases

TRAFFIC BLOCK	POWER BLOCK
<ol style="list-style-type: none"> 1. It is granted by SCR. 2. It means blocking of line for all Traffic. 3. It is generally pre-planned. 4. No train can run during traffic block. 	<ol style="list-style-type: none"> 1. It is granted by TPC. 2. It means blocking of line for electric traffic only. 3. It may be pre-planned, emergency or locally arranged. 4. Train with other than electric engine can run with suitable C/O, if required.

Q.(91) What is level crossing?

Level crossing means the intersection of road with Railway at the same level.

Q.(92) What is level crossing gate?

Level crossing gate means any form of movable barrier, including chain, capable of being closed across the road at the level crossing but does not included a wicket or a turnstile for the use of pedestrians.

Q.(93) What is Distinguishing markers of the gate stop signals?

- (a). Letter "G" in black on yellow circular disc in absolute block system D/L or S/L
- (B). Semi automatic gate stop signal in Automatic Signalling Section:- letter "G" in black on yellow circular disc and white illuminated letter "A" marker against black background. Letter "A" shall be lit only when the gate is closed and locked against road traffic.

Q.(94) What are the various classes of level crossing?

These are classified according to volume of rail and road traffic. there are five classes of level crossing: -

The classification of level crossings shall be as under:

Class Criteria

- (A). Special class - For roads TVUs greater than 50,000
- (B). "A" class - For roads TVUs between 50,000 & 30,000
Or Line capacity utilization 80% (on single line) and number of road vehicles greater than 1000
- (C). "B" class - For roads TVUs between 30,000 and 20,000 and number of road vehicles greater than 750
- 'B' Class is further subdivided (B-1 Class and B-2 class) -
B1 class for roads TVUs between 30,000 and 25,000
B2 class for roads TVUs between 25,000 and 20,000
- (D). "C" class - All other level crossings for road not covered in above classes.
- (E). "D" class - For cattle crossings.

Q.(95) Kinds of level crossing gate? Write in detail about level crossing?

Level crossing gate is of Four kinds

- (A) Lifting barrier
- (B) Leaf gate
- (C) Chain gate
- (D) Sliding gate

Level crossing gate is 1. Operating/Traffic gate 2. Engineering gate.

Traffic gate: Traffic gates are situated between outermost stop signals of a station.

Engineering gates: Engineering gates are located outside of the outermost stop signals of a station.

Census of a Level crossing:

➤ Periodical census of all manned/unmanned LCs is done in every three years.

- Conducted by supervisors of Engg, traffic & S&T department.
- Counting of rail unit and road unit over the LC is done for 7 days.
- The final result of census is known as TVU (Train vehicle Unit)

Formula of Calculation of TVU=

Total No. Of trains unit passed over the LC in 24 hrs X Total No. of road vehicle unit passed over the LC in 24 hrs.

Calculation of road vehicle unit:

- | | | |
|--|---|----------|
| 1. 04 wheeler or more wheelers road vehicle including Bullock Cart & Tonga | = | 01 Unit |
| 2. 03 wheeler road vehicles | = | 1/2 Unit |
| 3 Motorised. 02-wheeler road vehicle | = | 1/4 Unit |
| 4. pedestrian and Bicycle | = | 0 unit |

L-Xing gates are classified on the basis of TVU.

The following are the classes:

1. Special class 2. "A" class 3. "B" class (B-1 & B-2 classes) 4. "C" class 5. "D" class

Features of each class:

1. Special class:

a. TVU > 50,000, b. Busiest L-xing gate, c. Manned gate d. Interlocked gate, e. Normal position –open to road traffic, f. If TVU 1 lakh or more then recommended for ROB or RUB.

2. "A" class:

a. TVU between 30,000 to 50,000 or line capacity Utilisation 80%(on single line) and number of road vehicle>1000 b. Busy L-xing gate, c. Manned gate d. Interlocked gate, e. Normal position –open to road traffic, f

3. B-Class-TVU between 20000 and 30000 and number of road vehicles>750

"B-1" class:

a. TVU between 25,000 to 30,000, b. Normal traffic , c. Manned gate d. Interlocked gate, e. Normal position –open to road traffic,

"B-2" class :

a. TVU between 20,000 to 25,000, b. Below normal traffic , c. Manned, d. Non-Interlocked gate, e. Normal position –Closed to road traffic f. exchange of private number between SM & gateman is compulsory.

4. "C" class:

a. TVU < 20,000, and any other gates which do not come under above category b. Very less traffic , c. Manned/Un-manned gate d. if manned, non-interlocked and normal position - closed to road traffic. and. exchange of private number between SM & gateman compulsory.

5. "D" class: a. TVU=0 b. Un-manned gate c. Cattle crossing.

Q. (96) Write down essential equipment of gate man?

- (A) Hand signal lamp. (Tri colour- one)
- (B) Hand signal flag. (Green –one)
- (C) Hand signal flag. (Red –one)
- (D) Detonators. (10 in case)
- (E) Banner flag.
- (F) Chain with pad locks.
- (G) Gate lamp.
- (H) Tommy bar. (one)
- (I) Renner. (One)
- (J) Pick axe (One)
- (K) Cantor oil and water pot /bucket.

- (L) Gate diagram.
- (M) Basket, whistle, wall clock.

Q.(98) What action must be taken when there is an accident at level crossing?

- (A) If level crossing gate is not already in closed condition, it must be closed.
- (B) Gate must be protected by placing banner flag at 5 meters and one detonator at 600m and 3 detonators 10m apart at 1200m on both direction in the case signal line and in the direction of train coming on the double line.
- (C) Guard / Gate keeper to report the matter to next station if the gate is connected with a station by phone.
- (D) If no gate phone, guard to use field telephone and advise control and get assistance.
- (E) In case of injuries to passenger First aid must be rendered by Guard.
- (F) Arrange to all available nearest medical assistance by all train staffs Doctor and volunteers available on train.
- (G) If gate leaf or barrier is broken emergency chain must be used as gate for the train passage.

Q.(99) WRITE TRUE OR FALSE :

- (A) level crossing gate accident comes under class "C" accident (True/False)
- (B) In S/L or D/L MACL , Signalling arrangement absolute block section gate stop signal provided 180 Meters from the gate (True/False)
- (C) In TALQ S/L or D/L absolute block system gate stop signal , provided 4000 meters from the gate. (True/False)
- (D) A gate signal may be provided with "G" Marker (True/False)
- (E) Gate stop signal protecting points, "G" Marker not provided (True/False)
- (F) Gate come distance signal normal aspect is danger (True/False.)
- (G) All automatic gate stop signal will be provided with a "G" Marker (True/False)

Q.(100) What action must be taken by Guard or Driver When a gate signal With "G" Marker fails?

- (a) LP to stop and give one long continuous whistle.
- (b) He must wait for one minute during day and two minutes during night.
- (c) Even after this, if the signal is not taken off, LP to pass the signal at danger cautiously so as to be able to stop short of the gate.
- (d) While approaching, if the gate is closed and gateman is showing green hand signal, he may proceed without stopping.
- (e) If Gateman is available but not exhibiting hand signals, LP will stop short of the LC till hand signalled past the LC by the gateman.
- (f) If gateman is not available, ALP to go and close the gate and give proceed hand signal for passing the gate.
- (g) LP to pass the gate and stop clear of it by at least 2 bogie length. ALP will open the gate and board the engine and LP will start the train.
- (h) After reaching at the next station, LP will give memo to the station master indicating the condition of the gateman, gate and telephone.

Q.(101) Why necessity for a gate signal?

- (a) To avoid accident and provide safe running.
- (b) To control the movement of train at the level crossing.
- (c) To protect the gate.

Q.102 What is the duty of Gateman in case of failure of gate signal in 'off' position?

The gate man shall at once close and lock the gate across the road, place a detonator 90meters away from the defective signals and renew it after the

passage of every train the gate man may open the gate to pass road traffic only after the signal is so protected . If it happens at night or if it continues after dark the green glass of the signal arm in question shall be broken to prevent a green light being seen by the Loco Pilot of an approaching train.

Q.103- What is the duty of Gate man in case of boom/barrier is damaged?

- a) Close the level crossing against the road traffic with chain and pad lock immediately or before allowing the movement of train as the case may be.
- b) Report the failure over telephone or through the Loco Pilot of a passing train or through a gang man to the station master of the adjacent station and the nearest gateman.
- c) The SM on duty on receipt of the above information shall arrange to issue caution order to the Loco Pilots and guards of all trains entering to the section.
- d) Loco Pilot to whistle frequently and stop short of the L/C and be guided by the hand signal given by the gate man.
- e) The SM shall intimate the fact to the SM at the other end of the block section for issue of caution order.
- f) The caution order shall continue to be issued till the defect is rectified. The SM shall also advise the JE/SE (Sig). JE/SE (P-way) officials concerned for immediate rectification and other necessary action.
- g) The Loco Pilot shall insure that the level crossing is not obstructed and on being hand signalled by the gate man negotiable the L/Crossing cautiously.
- h) Necessary entries shall be made in the caution order resister and SM dairy by the SMs at either end at the affected section.

Q. 104 What are the various types of fixed stop signals in automatic block territories?

Ans. Various types of fixed stop signals in automatic block territory are-

- a) Automatic Stop signal - It is not dependent upon manual operation but is controlled automatically by the passage of a train into, through and out of the automatic block signaling section;
- b) Semi-Automatic Stop signal - It is capable of being operated either as an Automatic Stop signal or as a Manual Stop signal, as required;
 - i) When a Semi-Automatic Stop signal works as an Automatic Stop signal, it assumes 'ON' and 'OFF' aspects automatically according to the conditions of the automatic block signaling section ahead.
 - ii) When a Semi-Automatic Stop signal works as a manual Stop signal, it assumes 'on' aspect automatically on the occupation of the automatic block signaling section ahead, but assumes 'off' aspect when operated manually provided the relevant automatic block signaling section ahead are clear;
 - iii) When Semi-Automatic Stop signal works as an Automatic Stop signal, the 'A' marker provided under the signal is illuminated. When the 'A' marker is extinguished, the signal shall be deemed to work as a Manual Stop signal;
- c) Modified Semi Automatic Stop Signal:- Such signals are provided between two block stations, one each on either directions under special instruction. Such signals may work either as modified semi automatic stop signal with 'A' marker extinguished, or as normal automatic stop signal with 'A' marker illuminated.

C) A Manual Stop signal operated manually and which cannot work as an Automatic or a semi-Automatic Stop signal.

Q. 105 What is the authority to Pass Automatic / Semi-Automatic / Manually Operated / Gate stop Signal at 'ON'?

Ans: T/A 912

Q. 106 What is the Authority to Proceed without line clear on Automatic Block Signaling Section?

Ans: T/B 912

Q.107 What is form No. for Authority to Proceed for relief engine/Train into an Automatic Block signaling section?

Ans: T/C 912

Q. 108 What is the authority to Proceed on Automatic Block System during prolonged failure of signals?

Ans: T/D 912

Q.109 What is the speed of a train while passing Automatic stop signal at 'ON'?

Ans: 15/10 kmph. Upto next stop signal.

Q.110 What is the procedure to pass an Automatic stop signal at 'ON'?

1. If an automatic stop signal is at 'ON' Loco Pilot will bring his train to a stop at the foot of the signal.
2. LP will see that there is 'A' marker.
3. LP will stop one minute by day and two minutes by night.
4. Guard will immediately check up his LVI and keep vigilant attitude towards the rear.
5. LP will proceed cautiously up to the next stop signal at a speed not exceeding 15/10 kmph.
6. Even if, the next stop signal is in 'OFF' position, the LP shall continue to look out for any obstruction short of the same.
7. Guard will note down the signal number which has been passed at 'ON' in T/34HF and in the rough journal. He will also note the time lost in T/34HF.

Q. 111 What are the essentials of AUTOMATIC BLOCK SYSTEM on Double Line?

Where trains on double line are worked on the Automatic block system –

- a. The line shall be provided with continuous track Circuiting or Axle counters
- b. The line between two adjacent block stations may, when required, be divided into a series of automatic block signaling sections, each of which is the portion of the running line between two consecutive stop signals, and the entry into each of which is governed by a stop signal, and
- c. The track circuits or axle counters shall so control the Stop Signal governing the entry into an automatic block Signaling section that-
 - The signal shall not assume an "OFF" aspect unless the line is clear not only upto the next stop signal in advance but also for an adequate distance beyond it, and
 - The signal is automatically placed to "ON" as soon as it is passed by the train.
 - Unless otherwise directed by approved special instructions, the Adequate Distance referred above shall not be less than 120 meters.

- d. Under special Instruction one of the Automatic Stop Signal between two stations in Automatic Block signalling territory in each direction may be made as Modified Automatic Stop signal.
- e. The Mid section Modified Semi-Automatic Stop signal so provided shall be interlocked with the signals of the station ahead through track circuit and axle counter or both and shall be controlled by the SM of the station ahead, the relevant indication whether the signal is in normal Automatic mode or Modified Semi-Automatic mode shall be available to the SMs at both the ends.
- f. Adv. Starter of the station in rear shall be interlocked with the midsection Modified Semi-Automatic Stop signal in such a way that when working with "A" sign extinguished, the Adv. Starter shall be assume off aspect of be taken off only when the line is clear up to an adequate distance beyond the midsection Modified Semi-Automatic Stop signal. Similarly, the midsection Modified Semi-Automatic Stop signal shall assume off aspect automatically or be taken off only when the line is clear up to an adequate distance i.e. 120m beyond the Home signal of the station ahead.
- g. During abnormal condition like fog, bad weather impairing visibility, the mid-section modified semi-Automatic stop signal may be work by extinguishing "A" marker in the manner prescribed under special instructions and this action shall also ensure that the "A" marker of the Adv. Starter signal of the station in rear and home signal of the station in advance shall also be extinguished.
- h. During normal conditions, mid-section modified Semi-Automatic Stop Signal shall work as normal Automatic Stop Signal.
- i. When the LP finds mid-section modified Semi-Automatic Stop Signal with "A" marker extinguished in "ON" position, he shall stop his train in rear of the signal and inform this fact to the SM of the station ahead on approved means of communication as prescribed under special instructions.
- j. The SM of the station ahead may authorize the LP to pass the mid-section modified Semi-Automatic Stop Signal working with "A" marker extinguished in "ON" position through approved means of communication after ensuring conditions and procedure prescribed under special instructions.
- k. In case LP is unable to contact the SM of the station ahead, he shall pass the signal at "ON" after waiting for 5 minutes at the signal and proceed cautiously and be prepared to stop short of any obstruction, at a speed not exceeding 10 Kmph up to the next signal and act as per the aspect of this signal.
- l. The LP shall report the failure of mid-section modified Semi-Automatic Stop Signal to the SM of the station ahead.

Q. 112 What are the essentials of AUTOMATIC BLOCK SYSTEM on Single Line?

Where trains on a single line are worked on the Automatic Block

System –

- a. The line shall be provided with continuous track circuiting or axle counters.
- b. The direction of traffic shall be established only after Line Clear has been obtained from the block station in advance.
- c. A train shall be started from one block station to another only after the direction of traffic has been established.
- d. It shall not be possible to obtain Line Clear unless the line is clear, at the block station from which Line Clear is obtained, not only up to the first stop signal but also for an adequate distance beyond it.

- e. The line between two adjacent block stations may, where required be divided into two or more automatic block signaling sections by provision of stop signals.
- f. After the direction of traffic has been established, movement of trains into, through and out of each automatic block signaling section, shall be controlled by the concerned Automatic Stop Signal and the said Automatic Stop Signal shall not assume "OFF" position unless the line is clear upto the next Automatic Stop signal; provided further that where the next stop signal is a Manual Stop signal, the line is clear for an adequate distance beyond it and
- g. All stop signals against the direction of traffic shall be at "ON".
"Unless otherwise directed by approved special instructions, the adequate distance referred above shall not be less than 180 meters."
- h. Under spl. instruction one of the Automatic Stop Signal between two stations in Automatic Block signalling territory in each direction may be made as Modified Automatic Stop signal.
- i. The Mid section Modified Semi-Automatic Stop signal so provided shall be interlocked with the signals of the station ahead through track circuit and axle counter or both and shall be controlled by the SM of the station ahead, the relevant indication whether the signal is in normal Automatic mode or Modified Semi-Automatic mode shall be available to the SMs at both the ends.
- j. Adv. Starter of the station in rear shall be interlocked with the midsection Modified Semi-Automatic Stop signal in such a way that when working with "A" sign extinguished, the Adv. Starter shall be assume off aspect of be taken off only when the line is clear up to an adequate distance beyond the midsection Modified Semi-Automatic Stop signal. Similarly, the midsection Modified Semi-Automatic Stop signal shall assume off aspect automatically or be taken off only when the line is clear up to an adequate distance i.e., 180m beyond the Home signal of the station ahead.
- k. During abnormal condition like fog, bad weather impairing visibility, the mid-section modified semi-Automatic stop signal may be work by extinguishing "A" marker in the manner prescribed under special instructions and this action shall also ensure that the "A" marker of the Adv. Starter signal of the station in rear and home signal of the station in advance shall also be extinguished.
- l. During normal conditions, mid-section modified Semi-Automatic Stop Signal shall work as normal Automatic Stop Signal.
- m. When the LP finds mid-section modified Semi-Automatic Stop Signal with "A" marker extinguished in "ON" position, he shall stop his train in rear of the signal and inform this fact to the SM of the station ahead on approved means of communication as prescribed under special instructions.
- n. The SM of the station ahead may authorize the LP to pass the mid-section modified Semi-Automatic Stop Signal working with "A" marker extinguished in "ON" position through approved means of communication after ensuring conditions and procedure prescribed under special instructions.
- o. In case LP is unable to contact the SM of the station ahead, he shall pass the signal at "ON" after waiting for 5 minutes at the signal and proceed cautiously and be prepared to stop short of any obstruction, at a speed not

exceeding 10 Kmph up to the next signal and act as per the aspect of this signal.

- p. The LP shall report the failure of mid-section modified Semi-Automatic Stop Signal to the SM of the station ahead.

Q. 113 What is the difference between Absolute & Automatic Block system?

Ans:

Absolute Block System		Automatic Block System	
1	Between two block stations there will be only one block section.	1	The line between two block stations is divided into a series of auto signaling section.
2	Block section is normally considered as blocked.	2	Automatic signaling section is normally clear.
3	Suitable for every type of traffic, light or heavy.	3	Suitable for heavy density of traffic.
4	Block Stations are of 3 classes, i.e. A, B & C.	4	Block Stations are of SPECIAL class only.
5	Track circuit/ Axle counter may or may not be required.	5	Track circuit / Axle counter is essential.
6	For P/IN & P/OUT T/369 '3b' is issued.	6	For P/IN T/369'3b' & for P/OUT T/A 912 is to be issued.
7	Signals may be arm type or colour light type.	7	Signals must be MACL.
8	Normal aspect of stop signal is "stop".	8	Normal aspect of automatic stop signal is "Proceed".
9	Protection in rear of a train :- 600 – 600 – 10 – 10	9	Protection in rear of a train :- 90 – 90 – 10
10	Line clear is obtained to dispatch a train.	10	Line clear is not obtained to dispatch a train.
11	Signals are operated manually.	11	Signals are operated manually/ automatically.

Q. 114 How the SEMI AUTOMATIC STOP SIGNAL works?

Ans: Semi Automatic stop signal is capable of being operated either as an automatic stop signal or as Manual stop signal , as required :-

- ✓ When a semi automatic stop signal works as an Automatic Stop signal, it assumes 'ON' and 'OFF' aspects automatically according to the condition of the automatic block signaling sections ahead.
- ✓ When a semi-automatic Stop signal works as a Manual stop signal , it assumes 'ON' aspect automatically on the occupation of the automatic block signaling section ahead, but assumes 'OFF' aspect when operated manually, provided the relevant automatic block signaling sections ahead are clear;
- ✓ When a Semi-Automatic stop Signal works as an Automatic stop signal , the 'A' marker provided under the signal is illuminated .
- ✓ When the 'A' marker is extinguished , the signal shall be deemed to work as a Manual Stop signal.

Q. 115 How the MANUAL STOP SIGNAL works?

Ans: A manual stop signal is operated manually and which cannot work as an Automatic or Semi Automatic stop signal.

Q. 116 What are the procedures to pass the automatic stop signal at 'ON' both in Double Line & Single Line?

Ans. DOUBLE LINE:

- ✓ When a Loco Pilot finds an Automatic Stop Signal with an "A" marker at "ON", he shall bring his train to a stop in rear of the signal,
- ✓ He will wait for one minute by day and two minutes by night.
- ✓ If after waiting for this period, the signal continues to remain at "ON", he/she will give the prescribed code of engine whistle and exchange signals with Guard and then proceed ahead, as far as the line is clear, towards the next stop signal in advance exercising great caution so as to stop short of any obstruction.
- ✓ In case the visibility is fair not exceeding 15 kmph.
- ✓ In case the visibility is impaired on account of curvature, fog, rain, dust storm, engine working the train pushing or other cause the loco pilot shall proceed at a very slow speed which shall under no circumstances exceed 10 kmph.

SINGLE LINE:

- ✓ When a Loco Pilot finds an Automatic Stop Signal with an "A" marker at "ON", he/she shall bring his/her train to a stop in rear of the signal.
- ✓ He will wait there one minute by day and two minutes by night.
- ✓ If after waiting for this period, the signal continues to remain at "ON", and if telephone communication is provided near the signal, the loco pilot shall contact the Station Master of the next block station, to ascertain that there is no train ahead upto the next signal and that it is otherwise safe to proceed.
- ✓ If no telephone communication is provided near the signal or out of order, loco pilot shall give the prescribed code of engine whistle and exchange signals with Guard and then proceed ahead, as far as the line is clear, towards the next stop signal in advance exercising great caution so as to stop short of any obstruction.
- ✓ In case the visibility is fair not exceeding 15 kmph.
- ✓ In case the visibility is impaired on account of curvature, fog, rain, dust storm, engine working the train pushing or other cause the loco pilot shall proceed at a very slow speed which shall under no circumstances exceed 10 kmph.

Q. 117. What is the procedure for working of trains during failure of all or series of signals in the Automatic Block system on double line likely to last for some time and cause serious delay while means of communication are available?

- a) The Station Master shall inform the controller and the concerned Station Master of the affected section.

b) Before the train is allowed to enter the affected section it shall be brought to a stand and the Driver and the Guard of the train advised of the circumstances by the Station Master.

c) The station master on duty at the station in rear of the affected section shall obtain 'line Clear' for each train by one of the following means indicated below in order of preference:-

- i) Inter cabin / Station Group telephone,
- ii) Rly. Auto phone / BSNL phone
- iii) Control telephone
- iv) VHF Set.

d) The station Master on duty at the station in advance shall not give such 'Line Clear' unless:-

- i) The whole of the last preceding train has arrived complete.
- ii) The line on which it is intended to receive the train is clear up to the starter and for a distance of 180 meters beyond it,
- iii) All signals behind the said train have been put back to 'on'.
- iv) All points have been correctly set and all facing points locked for the admission of the train on the said line.

NOTE- The granting of line clear shall be supported by a Private Number and by exchange of identification Number also.

e) (i) The Station Master on obtaining 'Line Clear' from the station in advance shall give the Driver / Motorman of each train an Authority to proceed T/D-912 on Automatic Block System during prolonged failure of signals

(ii) A Caution order shall invariably be issued to the Driver / Motorman and Guard as prescribed in sub-rule (g) (i) and (ii) below.

f) Before handing over the 'Authority to proceed' all the points over which trains will pass shall be correctly set and all facing points locked. Whenever any power operated points have to be operated for diverting trains these may be released and operated as per the instructions contained in the Operating Manual.

g) (i) The Driver / Motorman of the first train entering the affected section shall proceed with utmost caution and shall not run at a speed exceeding 25 KM per hour under any circumstances subject to other restrictions in force and continue to look out for any obstruction until he reaches the station ahead.

(ii) After ensuring that the first train has arrived safely at the station in advance, the Driver of the subsequent train may run at normal speed subject to the observance of any other speed restrictions in force exercising great being open to road traffic and other obstructions and stop short of any obstruction that he may encounter on the run.

h) When approaching the next station, the Driver / Motorman shall obey aspect of the first Stop signal. The Station Master after satisfying himself that all is safe shall arrange to receive the train by taking 'off' the relevant reception signal or pilot the train if the situation warrants.

(i) Clearance of the section by each train shall be intimated to the station in rear supported by a Private number.

(ii) Train Signal Register Book shall be brought into use and all entries regarding train working recorded therein. Controller shall be kept advised of movement of all trains in the affected section.

- k) As soon as signals are put right by the competent authority, normal working of trains on Automatic Block System shall be resumed after exchanging messages with Private Numbers by the Station Masters concerned assuring that the section is clear. Controller's advice shall be obtained before resumption of normal working.

Q. 118 What is the procedure for working of trains under Automatic Block system on double line during failure of the means of communication when signals are operative?

- (a) The Station master of the station in rear of the affected section shall in consultation with the Section Controller, or with the Station Master of the station immediately in rear of his station, if Section Controller is not available, ascertain the number and description of train(s) in the section and the expected time of arrival at his station. He shall then decide the sequence for allowing the trains into the affected section keeping in view the order of precedence and make out a list in duplicate under his stamp and signature indicating the number and description of the trains in the sequence in which the trains shall be allowed to leave his station.
- (b) Before the first train of the series so listed, is allowed to enter the affected section, it shall be brought to a stop. A caution order shall be issued to the Driver and the Guard detailing the circumstances and advising the Driver to bring his train to a stop outside the first stop signal of the station in advance and sound the prescribed code of whistle and thereafter be guided by the instruction of the Station Master of the station in advance. The Driver shall also be given a copy of the list (mentioned in sub-rule (a) to be handed over to the Station Master of the station in advance.
- (c) On arrival of the train at the station in advance of the affected section, the Driver shall hand over the list to the Station Master and the latter shall paste the same and make necessary entries in the log-register about the number and description of the trains according to the sequence shown therein. As and when the train actually passes / arrives his station he shall score out the train number and description from the list indicating the time of its arrival / passing, until and unless he is advised otherwise by the Station Master of the station in rear in the similar manner.
- (d) After sending out the list through the Driver as per sub-rule (b) above, the Station Master of the station in rear shall paste the other copy in his Train Log-register. Subsequent train(s) of the list need not be stopped out of course, provided they are allowed to enter the affected section in the same sequence as detailed in the list. As each train enters the section, he shall also score out the train number and description from his list.
- (e) If due to any operational exigencies, it becomes necessary to change the sequence for running of the trains in the affected section or on the completion of the movement of all the trains in list already sent, a fresh list shall be prepared with necessary remark for any change in the sequence of the previous list and action taken for working of the subsequent trains as per fresh list in the same manner as indicated in sub-rule (b) to (d) above.

Q. 119. What are the conditions for taking “OFF” manual stop signals in Automatic Block territory on single line?

- (1) Home signal –When a train is approaching a Home Signal, otherwise than at a terminal station, the signal shall not be taken ‘off’ unless the line is clear not only up to the Starter but also for an adequate distance beyond it.
- (2) Last Stop Signal –The last Stop signal shall not be taken ‘off’ for a train unless the direction of traffic has been established and the line is clear up to the next Automatic Stop signal, or when the next Stop signal is a Manual Stop signal for an adequate distance beyond it.
- (3) The adequate distance referred to in sub-rules (1) and (2) shall never be less than 120 meters and 180 meters respectively unless otherwise directed by approved special instructions. A sand hump of approved design, or subject to the sanction of the Commissioner of Railway Safety, a derailing switch shall be deemed to be an efficient substitute for the adequate distance referred to in sub-rule (1).

Q. 120. Write down the procedure for working of trains in Automatic Block System on double line during obstruction of one line, when signals are operative and means of communication are available?

1. When one line on a double line section becomes obstructed due to any reason, TSL is introduced.
2. Before introducing TSL working, the SM must obtain a written certificate from the Guard/Driver/PWI/TFO etc. that one line is clear and free from all obstruction and shall consult with the section controller and the SM of the other end to introduce TSL working if there is any doubt that the said line is clear or not, the line must be inspected by PWI and a written certificate is obtained by the SM. TSL Working shall be introduced between the nearest station having cross over between UP&DOWN line on either side of the obstruction.
 2. After ascertaining that one line is clear, both the SMs shall exchange messages supported by private number in which the following items to be communicated: -
 - a) Cause of introduction of TSL working.
 - b) Line on which S/L working will be introduced.
 - c) Source of information that the said line is clear.
 - d) Place of obstruction.
 - e) Speed restriction if any on the said line.
 - f) Last train which arrived or left the block station issuing the message.
3. On receipt of the acknowledgement from the SM at the other end supported by private number single line working shall be introduced.
4. The SM proposing TSL working shall obtain controller’s order no. and suspended D/L working in consultation with the SM of the other end and single line working will be introduced.
5. Line clear shall be obtained by the means of electrical communication instruments which shall be used in order of preference as:-
 - a) Station to station fixed telephones.
 - b) Fixed telephone such as Railway Auto phone/BSNL phone.
 - c) Control telephone.
 - d) VHF Set.

A) For trains running in the wrong direction: -

- a) All trains running in the wrong direction shall be worked by obtaining line clear for each train by means of communication as stated above.
- b) Line clear will be given only when:-

- i. The whole of the last preceding train has arrived complete;
- ii. The line on which the train is to be received is clear up to fouling mark or starter if any at the trailing end; and
- iii. All points at the approaching end are correctly set and the facing points are clamped and padlocked.

c) The following documents shall be given to the LP and Guard:-

- (i) Paper line clear ticket (T/C-1425 for 'UP' train & T/D-1425 for 'DN' train)
- (ii) Authority to pass automatic, semi-automatic and manually operated signal/GSS at 'ON'(T/A-912)
- (iii) Caution Order (T-409) indicating the line on which TSL working is introduced, kilometer, speed restriction if any on the said line and an endorsement to inform gateman and gang man working in the section. The speed of the first train shall be restricted to 25 kmph subject to observance of any other restriction already in force. Subsequent trains may run at normal speed subject to observance of any other restriction already in force.

d) The train shall be admitted at the receiving station by piloting in on form no. T/509 and the complete arrival of the train shall be reported to the rear station supported by private number.

B) For trains running in the right direction:-

- a) For each first train to run in the right direction line clear shall be obtained as per the provision started above and such line clear shall be given only-
 - (i) The last train running in the wrong direction has arrived complete for which private number has been exchanged between the station masters.
 - (ii) The line is clear at least 180 m beyond the FSS.

b) The authorities given for the train running in the wrong direction shall be given to each first train running in the right direction.

c) Subsequent trains to run in the right direction shall be allowed to follow each other on automatic signal indications provided the SM of the station in rear has intimated the SM of the station in advance of the fact that the former is permitting particular trains to follow, and has ascertained the latter's readiness to receive them and obtain private number for each such train.

Subsequent trains shall be allowed with caution order only.

C) Resumption of normal working

On received of a written certificate from Driver / Guard / PWI /TFO that the obstructed track is free and SM shall convey the message to the SM at the other end by exchange of private number and after consultation with the section controller they will decide, the train after the passage of which normal working shall be resumed. An entry shall also be made in the train Signal Register showing the time at which D/L working was suspended, S/L working was introduced and normal working resumed.

C) All records in connection with TSL working shall be retained at the station for inspection by inspecting officials.

Q. 121. Write down the procedure for working of trains in Automatic Block System on double line during means of communication and series of Automatic stop signal failed?

Ans:

The following procedure shall be adopted for train passing:-

1. Stop all the train and advised the circumstance to the LP and guard of the train.
2. Hand over the Authority on prescribed form no. T/B-912 which contains the following items:-
 - a) An authority to proceed without line clear.
 - b) An authority to pass all automatic, semi-automatic and manually operated signals at 'ON'.
 - c) A caution order restricting the Speed to 25/10kmph.
3. When view ahead is not clear, a Railway employee with hand signals must guide the movement of the train.
4. The engine whistle shall be freely used.
5. Subsequent trains shall be allowed at a clear interval of 15 **minutes** between the trains.
6. Except LSS all signal may be taken OFF for reception and departure of trains, provided that the FSS shall be taken 'OFF' indirectly.
7. The guard shall keep a sharp look out in the rear and exhibit a danger hand signal.
8. On account of accident & obstruction, 3 detonators shall be placed at a distance of 250,250,10m.
9. When approaching the station ahead, the driver must bring his train to stop outside first stop signal and sound continuous whistle.
10. If the train is detaining for more than 5mints at the foot of the FSS, Guard shall arrange to protect the train by placing 3 detonators at distance of 250,250,10m apart.
11. The driver shall make over the authority to the SM on arrival at the next station.
12. All the above documents shall be kept by the SM in his safe custody for inspection by the DTI.
13. A record of all trains passed over the block section on the authority of T/B-912 shall be maintained in TSR.
14. Train must continue to work on this system until either the signals are put right or any means of communication is restored.
15. As soon as any means of communications has been restored the SM must send a message to the SM of the other end and obtain acknowledgement.
16. Line clear shall not be obtained or given by means of Communications restored, until both the stations are satisfied that the lines between stations are clear of trains.

Que. 26: When an IBP is treated as closed?

Ans: Closing of IBP:-

If the electrical block instruments provided at the stations on the either side of an IBP; or the track circuiting provided beyond the last stop signal; or the axle counters provided at either end of the block section fail, the IBSS shall be treated as defective and the IBP shall be deemed to be closed and section between the stations on the either side of the IBP shall be treated as one block section.

Q. 122 What are the various authorities to proceed given to the LP?

Ans

- (A): On the double line, by the taking 'off' of the last stop signal.
- (B) On the single line, either –
 - (i) by a token for the block section, taken from an electrical block instrument, or
 - (ii) by a line clear ticket duly signed by the Station Master, or

(iii) by any document prescribed in this behalf by special instructions, or by the taking 'off' of the last stop signal in lieu of tangible authority in case of tokenless block instrument area.

Q.123 Write short note on TSR?

Ans: Train Signal Register: -A train signal register shall be kept by the SM/CM.

- (i) All signals received or sent on the electrical block instruments and the timings of receipt and despatch shall be entered therein, immediately after acknowledgement, by the person operating the block instrument.
- (ii) The timings entered in the register shall be the actual timings, except that any fraction of a minute shall be counted as one.
- (iii) All entries in the register shall be made in ink.
- (iv) No erasure shall be made in the register, but if any entry is found to be incorrect, a line shall be drawn through it, so that it may be read at any time and the correct entry shall be made above it.
- (v) The person who keeps the register for the time being shall be responsible for all entries made therein and for correctly filling in each column thereof.
- (vi) The Station Master who makes an entry for a train, shall continue on duty till all entries affecting that train are complete. The Station Master who gives line clear for a train shall remain on duty till the train has arrived and the 'Train out of block section' signal has been given by him to the station in rear and acknowledged. Similarly, the Station Master who receives line clear shall remain on duty till the "Train out of block section" signal is received from the station in advance and is acknowledged by him.
- (vii) But in case of duty changing time of Station Master, a line shall be drawn right across the train register, and the outgoing station master shall sign his name legibly and enter the time above the line or make any of the following endorsements as may be appropriate in the event of his having to sign off at any time after his rostered duty hours terminate.
- (viii) The incoming Station Master shall sign his name legibly and enter the time below the line.
- (ix) In the event of another train being signalled after the incoming Station Master has reported and before the outgoing Station Master has signed 'off' the line clear shall be given by the former and latter need not wait for completing the transactions in respect of that train.
- (x) If the detention of the train in block section due to an accident or for any other exceptional reasons exceeds by more than one hour beyond the normal running time. In such case the Station Master may sign 'off' after making the following entries in red ink in the Station Master's diary as well as in the Train Signal Register. Above entry shall be signed jointly by the Station Master who goes off duty and the Station Master who relieves him.

On double /single line _____ (block section/UP/DN line) is occupied by the _____ train number and train -----left at _____ hrs.

* In this case Item no. (vii) shall not be applicable.

SHORT NOTES –

1) Permanent Speed Restriction - speed restrictions which are likely to continue over a long period, with no prospect of early removal, are termed as permanent restrictions and these shall be notified in the working time table. Semi-permanent restrictions which although of limited duration, are likely to extend for the full period of the working time table, shall also be notified therein. The rules relating to permanent speed restrictions shall also apply to semi-permanent speed restrictions also. All

drivers shall make themselves fully conversant with the up-to-date list of permanent restrictions and observe them meticulously.

2) Whistle Board – These are provided with a view of indicating to the Driver of an approaching train to the need for sounding the Whistle/horn to warn the staff who may be working on the line, as well as the Gateman and the road users of Level Crossings, about the approaching train.

The Driver shall sound the Whistle/horn continuously up to the Level Crossing Gate/site of work.

3) Showing of Engineering Signal: Whenever due to lines being under repair or due to any other obstruction it is necessary to indicate to the Driver that he has to stop or proceed at a restricted speed, the following signal shall be shown:

a) When the train is required to stop and the restriction is likely to last only for a day or less – A Banner flag shall be exhibited at a distance of 600 M and 3 Detonators shall be placed at a distance of 600-600-10-10 M from the place of obstruction. In addition stop hand signal shall be shown at a distance of 30M from the place of obstruction, at the Banner flag and at a distance of 45 M from the Detonators. The Railway Servant at the place of obstruction shall give proceed hand signal to the Driver when he may resume normal speed after the train has been hand signal pass the place of obstruction.

b) When the train is required to stop and the restriction is likely to last for more than 1 day - A stop indicator shall be exhibited at a distance of 30M from the place of obstruction and a Caution indicator at 1200 M from the place of obstruction. In addition Termination indicators shall be provided at the place where a Driver may resume normal speed.

c) When the train is not required to stop and the restriction is likely to last only for a day or less – Proceed with Caution hand signal shall be exhibited at a distance of 30M and again at a distance atleast 800M from the place of obstruction. The Railway Servant at the place of obstruction shall give Proceed hand signal to indicate to the Driver when he may resume normal speed after the train has been hand signal past the place of obstruction.

d) When the train is not required to stop and the restriction is likely to last for more than 1 day - A Speed indicator shall be exhibited at a distance of 30M from the place of obstruction and again a Caution indicator atleast a distance of 800M. In addition Termination indicators shall be provided at the place, where a Driver may resume normal speed.

4) Banner Flag – Banner Flag is a temporary fixed Danger signal, consisting of a Red cloth supported at each end on a post and stretched across the line to which it refers. It is provided to Engineering Officials and Gateman of the Level Crossing Gate for their use. A Driver has to dead stop the train if he sees the Banner Flag ahead.

Q 124 Discuss various terms which are related to Motor Trolleys and Lorries.

Ans)

- i. TROLLEY: A vehicle, which can be lifted bodily off the line by 4 men-is called TROLLEY (i.e., its weight does not exceed 220 kg).
- ii. LORRY: Similar like trolley but heavier vehicle, which 4 men-can lift bodily of the line-is called LORRY.
- iii. MOTOR TROLLEY: Any trolley, which self-propelled, by means of motor-is called Motor Trolley. (Note: In case of emergency, when trolley may used for the carriage of permanent way or other heavy material, then it is so called, lorry also).

- iv. DIP LORRY: Dip lorry consists of two separate 4-wheeled units that can be join together to form a single vehicle for the conveyance of materials and equipment. When treated like lorry to run on light, whether as single units or in pairs coupled together.
- v. MATERIAL TROLLEY: similar to Lorry with its weight not exceed 220 kg for to conveyance of materials.

Motor Trolley: Two types, a) Light Motor Trolley b) Heavy Motor Trolley.

Light Motor Trolley: Any trolley, which is self-propelled vehicle, which can be lifted bodily off the line/track by 3 men and weight shall not exceed 165 kgs.

Heavy Motor Trolley: Any trolley, which is self-propelled cannot be lifted bodily off the line/track by 3 men and shall exceed 165 kgs.

Q 125 Discuss about working of Motor Trollies.

Ans) A Motor trolley shall always run light that is on 'line clear' or to follow a train/light engine/another motor trolley-subject to the 'following' either on Single Line/Double Line. Motor Trolley shall not carry more than 8 person and two persons shall always-seated in front.

On Line clear S/L- Authority to proceed will be Block Token/T/369(3b) with pvt. no.

On Line clear D/L-Authority to proceed will beT-369(3b) with pvt. no

Speed: 40 kmph during day and 30 kmph at night.

15 kmph on points/X-ings and when passing station.

Line Clear will be granted by turning the instrument to TOL position supported by PN.

On arrival of the trolley at the station in advance, SM will give TOS report for normalising the instrument supported by PN.

Q 126 Discuss the procedure while following of Motor Trolley behind a Train/Light Engine/Another Motor Trolley.

Ans)

1. Both on Double Line and Single Line, a motor trolley may be allowed to follow a train/Light Engine/another motor trolley. Here maximum two motor trollies may be allowed to follow.
2. Such following movement will be allowed during day light hours only. Authority to follow shall be "Motor Trolley Permit (T/1525)"
3. Last motor trolley shall be treated, as the last vehicle of the train.in other words signal taken off for a train/light engine/motor trolley preceding it shall not be put back to on until the following motor trolley has passed such signals. The motor trolley shall be admitted to the same line as the train/light engine/ motor trolley it is following.
In case the following motor trolley fails to follow closely, the reception signals may put back to ON position after 10 minutes in order to pass the blocked road traffic. And after clearance of the same, motor trolley may be admitted on signals on any line as per the convenience.
4. Before allowing following motor, trolley SM shall advise SM ahead about for the purpose and supported by PN, as it is acknowledged by station ahead also by giving a PN.
5. Entry of such movement shall be made in red ink on Train Signal Register.
6. If the following motor trolley shall not arrive the station within 10 minutes due to its failure or by any other reason, after the arrival of first trolley/train/ light engine like as mentioned above. And the trolley fails to do so; SM shall put

back the signal to ON position, in order to perform shunting or any other movement or to clear road traffic.

7. In case a motor trolley follows another motor, trolley travelling on line clear, the leading motor trolley will get its usual "Authority to Proceed" and "Motor Trolley Permit (T/1525)" will be given to the following one.
8. If two motor trolleys follow another motor trolley, the leading motor trolley shall get an "authority to proceed" under the system of working", second one gets "Caution Order (T/B 409)", and the last one gets "Motor Trolley Permit (T/1525)" by mentioning PNs individually.

Q 127 Write the procedure of running Motor Trolley in Automatic Block System.

1. Normally the motor trolleys are allowed during daylight hours under the following manner only.
2. At night or in emergency, when there is no train to follow or it is necessary to run motor trolley as light (that is single individual unit), Automatic Block System shall be suspended under exchange of PNs with message and the line clear shall be obtained by treating the system as 'Absolute Block System'.
3. Authority to proceed will be T/369(3b) with PN.
4. Automatic Block System shall be resumed after getting arrival/TOS report in support of PN, from the station ahead.
5. If the motor trolley shall not clear the section and TOS report not received with in normal running time, authenticated by PN the train following a motor trolley shall be allowed with caution order for to look and proceed cautiously.

Q 128 What are the documents get by Motor Trolleys under different systems of working in force ?

Ans)

I.	Token Area (In normal condition))	- I)	Token and Taking-off the LSS
II.	When Token Block Instrument is suspended/out of order.	- I)	PLCT with P.No. & ID No.
III.	Token Less Block Instrument (In normal condition)	- I)	T/369(3b) with P.No.
IV.	Token Less Block Instrument Out of order	- I)	PLCT with P.No. & ID No.
V.	Lock & Block Instrument in D/L section (In normal condition))	- I)	T/369(3b) with P.No.
VI.	If three motor trolleys are to be allowed in the block section:- Ist Motor Trolley IInd Motor Trolley IIIRD Motor Trolley	- - -	3 Motor Trolleys can follow one after another. T/369(3b) with P.No. (On Line Clear) Caution Order(T/409) with P.No. Motor trolley permit with pvt. no.(T/1525)
VII.	In rear of a train/an Engine Ist Motor Trolley IInd Motor Trolley	- - -	2 Motor Trolleys can be allowed. Caution Order (T/409) with P.No. Motor trolley permit with pvt. no.(T/1525)

VIII. Automatic Area

-

In Following of trains during day light hours only.

1. Motor trolley permit with pvt. no.(T/1525)
2. C/Order (T/409) (by informing the train ahead)
3. If LSS fails- (T/A 912) will be issued to pass the same at 'ON' position.

IX. In Automatic Area, At night or in an emergency or when there is no train to follow: –

First to suspend the normal Auto Working and line clear will be taken as per rule – and T/369(3b)] with P.No. shall be given.

Q. 129 Discuss regarding Lorry and Trolley working with block protection, and without block protection.

Ans) Trolley/Lorry Working:

1. A lorry shall normally be run under block protection.
2. In case such block protection is likely to cause detention to train, the official in-charge of the lorry or trolley, after considering the urgency of the work to be done, should decide whether to place the trolley or lorry on the line without line clear being obtained or wait for the line clear obtained for this.
3. But in the following circumstances the trolley or lorry shall invariably be work under block protection.
 - a.) it is necessary during an emergency to run it at night or during thick, foggy or tempestuous weather impairing visibility.
 - b.) It is loaded with rail/girders
 - c.) It is loaded with especially heavy materials which cannot be readily unloaded
 - d.) It is required to work on the section which will be mentioned in the SWR of different stations.

Procedure for working of Lorries or Trolleys between station under block protection:

- i. The official in-charge of the lorry/trolley, intending to put the lorry on line shall give requisition to the SM, mentioning all relevant particulars in the prescribed form T/1518 with proper acknowledgement.
- ii. On receiving the requisition; the SM shall obtain permission from the section controller with SCR O.No. Then he will exchange message with the SM of the other end of the station supported by PN. Thereafter he will issue a written authority to the in-charge of the lorry in the prescribed form no. T/1518 to work in the section.
- iii. On S/Line where token less block instrument provided the OCC key in case of Diodo Block Instrument, SKB Key in case of Siemens Instrument and SHK Key, in case of Podanur Instrument. And in case of Token Block Instrument where provided the Token shall be handed over to the lorry/trolley along with written authority, in case the block instruments are in normal working order.
- iv. When a track on a D/Line section is blocked for a lorry/trolley, the official in-charge shall run the trolley only on the track that has been blocked and shall not placed it on the other track either on the outward journey or on the return journey.

- v. When approaching a station the leading hand signalled man shall promptly report his arrival to the SM, who shall make immediate arrangements for the safe reception of the trolley/lorry either by taking off the approach signals or by piloting it from the FSS.
- vi. When the Trolley/Lorry is removed from a line at a station, the official in-charge shall issue a trolley removal report to the SM in prescribed form on T/1518 .The ball token/OCC Key/SKB Key, SHK Key if any shall also be handed over to the SM with due acknowledgement.
- vii. In case the lorry is removed in mid section, the trolley removal report along with the block token, OCC key, SKB key SHK key if any shall be send to the nearest station and shall be handed over to the SM with due acknowledgement.
- viii. Trolley removal report in the prescribed form along with the ball token, OCC key, SKB key or SHK key if any shall be the authority for the SM to cancel the block and resume the normal working of trains in the **concerned sections.**
- ix. The official in-charge of a lorry on block section shall be responsible for ensuring that the lorry is removed from the line at such time as to enable the block being cleared with in such period as stipulated originally, except in cases where in extension of the duration of block has been authorized subsequently.

Procedure for working of Lorries/Trolleys between station without block protection.

- i. The official in-charge of lorry/trolley, shall give a requisition to the SM in the prescribed form T/1518, clearly endorsing that the trolley shall work without block protection. If there is any speed restriction for train to be followed, in concerned section, shall also be endorsed on it.
- ii. On receiving the requisition the SM shall exchange message with the SM of the other end block station under exchange of PNs, in consulting, with the SCR. Thereafter, he will authorize the trolley in-charge bin the prescribed form T/1518 to work in the section without block protection.
- iii. Until the trolley removal report in the prescribed form T/1518 has been received at either end of the section shall stop all trains entering the concerned section and serve caution orders to the drivers/guards, advising them that a lorry is working in the section.
- iv. A driver, on receiving intimation that a lorry is on the section, shall work his engine or train at such speed that he can, without difficulty bring it to a stand with in a distance of 800 mts,. After sighting the First Stop Hand Signal.
- v. A lorry/trolley shall be removed clear off the line at least 10 minutes before a train is expected to pass the spot.

Q 130 What do you know about Patrol Book & Restriction Book ?

Ans) **Patrol Book:** It is a book available with Patrol men during their duties. These books are exchanged one with other in the section as per their scheduled time chart during their patrolling duties. As per the DEN trip chart the Patrol Book shall be maintained ant take signatures of adjacent Station Masters during their duty period.

Restriction Book: This is a book available with engineering department personnel, where posted at Stop Indicator. The all drivers who are passing through over the section shall sign in this register by stopping their train.

Q 131 Duty of a Station Master, when a Patrol man does not turn up within 15 minutes of his scheduled arrival at the station.

Ans:

- a) SM shall stop run through trains, proceeding in to the next block section out of course.
- b) He shall advice the SM at the other end of the section to take similar action and also advice the Section Controller.
- c) He shall issue a Caution Order to every train proceeding into the block section advising the Driver to be on the alert and to observe a speed restriction of 40 Kmph during the Day when visibility is clear and 15 Kmph during the night or when visibility is impaired. The Caution Order shall be issued until the Patrol man arrives and reports that the line is safe for passage of trains.
- d) He shall send out a Station Staff /Gang man to lookout for the Patrolman and the reason for delay and in case the Patrolman is not found the SM shall immediately contact the concerned Gangmate/PWI to arrange for another Patrolman.

Q.132 Write down the essentials and authority on the one train only System? What is the procedure on the one train only system in case of accident or disablement?

Ans. Essentials of the one train only system: -

Where trains are worked on the one train only system, only one train shall be on the section on which this system is in force, at one and the same time.

Procedure in case of accident or disablement: -

1. The train shall be protected as per Rule 6.03 in the direction from which assistance can be obtained.
2. The Guard of the train shall convey the message to the SM of the station from which assistance can best be obtained and if it is necessary for such Guard to proceed to such station, he shall issue a memo to the LP to keep the train stationary until his return and obtain his acknowledgement.
3. If the message is received by the SM of the station which is not the base station, he shall communicate the same to the SM of the base station. The SM of the base station, receiving the message may allow another engine to enter the line, if the assisting/relief engine is required.
4. The assisting/relief engine shall be accompanied either by the Guard or by the ALP of the disabled train, who shall explain the circumstances like place (km.) and nature of defect etc. to the LP of such engine.
5. The Guard of the disabled train shall be responsible for the safe and proper working of train on the line until the disabled train has been moved and any other engine sent to the assistance of the disabled train has been returned to the base station.
6. If there is no Guard, the ALP or, if necessary, the LP shall perform the duties of Guard, provided that the engine is not left unmanned.

Q. 133 Write down the essentials of the Train-staff and Ticket System? What are the conditions to be observed for following trains on the Train-staff and Ticket System? When the Train-staff or Train-staff Ticket is to be delivered to the LP?

Ans. (A) ESSENTIALS OF THE TRAIN-STAFF AND TICKET SYSTEM: -

- a) A single Train-staff shall be kept at one of such stations, &
- b) No train shall start from either of such stations to the other unless the said Train-staff is at the station from which the train starts and has either been handed to or shown to the LP by the SM when giving such permission.

(B) Conditions To Be Observed For Following Trains On The Train-Staff And Ticket System: - Trains shall not follow one another in the same direction between Train-staff stations, unless

- a) The LP has been properly warned of the time of departure of the preceding train and of the place at which it will next stop;
- b) All the trains are timed to run at the same speed i.e. **25 kmph**, except under special instructions;
- c) An interval of **15 minutes** has elapsed since the departure of the preceding train.

(C) Train-staff or Train-staff Ticket is to be delivered to the LP in the following manner: -

1. When no other train is intended to follow before the Train-staff will be required for a train running in the opposite direction, the Train-staff shall be delivered to the LP.
2. When other trains are intended to follow before the Train-staff can be returned then, a Train-staff Ticket indicating that the Train-staff is following, shall be delivered to the LP of each train except the last; and the Train-staff shall be delivered to the LP of the last train.
3. When a train is assisted by a second engine in the rear, a Train-staff Ticket shall be delivered to the LP of the front engine and the Train-staff shall be delivered to the LP of the rear engine;
Provided that if both the engines attached to the train are to travel over the entire length of the line to which the Train-staff applies, and the train is to be followed by other trains, a Train-staff Ticket shall be delivered to the LP of each of the engines attached to the first mentioned train.
4. When a train is assisted by a second engine in the front, the Train-staff or a Train-staff Ticket, as the case may be, shall be delivered to the LP of the leading engine.
5. When a material train has to stop between stations, the Train-staff shall be delivered to the LP.
6. The Train-staff or a Train-staff Ticket shall not be delivered to the LP of any train until the train is ready to start
7. The LP shall not accept a Train-staff Ticket unless he sees the Train-staff at the same time in the possession of the person who delivers the Train-staff Ticket to him.

Q. 134 Write down the procedure when engine is disabled between two stations on the Train-staff and Ticket System? What are the rules for protection of trains on the Train-staff and Ticket System?

Ans. (A) Procedure when engine is disabled between two stations on the Train-staff and Ticket System: -

1. If an engine which carries a Train-staff is disabled between two stations, the ALP shall take the train-staff to the staff-station in the direction where assistance can best be obtained in order that the Train-staff may be available at that station for delivery to LP of the assisting engine.
2. If an engine which carries a Train-staff Ticket is disabled between two stations, assistance shall ordinarily be obtained only from the station at which the Train-staff has been left; but if assistance can more readily be obtained from another station

in the opposite direction, immediate steps shall be taken to have the train-staff transferred to the other end of the section.

3. Whenever an engine is disabled between two stations, the ALP shall accompany the assisting engine to the spot.

(B) Rules for protection of trains on the Train-staff and Ticket System: -

- i) When a train which is followed by another train is stopped between stations, the Guard and the LP shall take action to protect the train.
- ii) When a train is stopped between stations and if the detention exceed or is likely to exceed 5 minutes, it shall be protected as per Rule 6.03, except that the Guard shall place 3 detonators at a distance of 250 m., 250 m. & 10 m. from the train, irrespective of gauge.

Q. 135 Write down the essentials and authority on the one train only System? What is the procedure on the one train only system in case of accident or disablement?

Ans. Essentials of the one train only system: -

Where trains are worked on the one train only system, only one train shall be on the section on which this system is in force, at one and the same time.

Authority To Proceed On The One Train Only System: -

The Metallic Badge is the authority to proceed in this system.

Procedure in case of accident or disablement: -

1. The train shall be protected as per Rule 6.03 in the direction from which assistance can be obtained.
2. The Guard of the train shall convey the message to the SM of the station from which assistance can best be obtained and if it is necessary for such Guard to proceed to such station, he shall issue a memo to the LP to keep the train stationary until his return and obtain his acknowledgement.
3. If the message is received by the SM of the station which is not the base station, he shall communicate the same to the SM of the base station. The SM of the base station, receiving the message may allow another engine to enter the line, if the assisting/relief engine is required.
4. The assisting/relief engine shall be accompanied either by the Guard or by the ALP of the disabled train, who shall explain the circumstances like place (km.) and nature of defect etc. to the LP of such engine.
5. The Guard of the disabled train shall be responsible for the safe and proper working of train on the line until the disabled train has been moved and any other engine sent to the assistance of the disabled train has been returned to the base station.
6. If there is no Guard, the ALP or, if necessary, the LP shall perform the duties of Guard, provided that the engine is not left unmanned.

Q. 136 What are the salient features of SWR? Describe in detail?

Ans.

- ✓ SWR stands for Station Working Rule.
- ✓ Each Station is provided with SWR under special instructions.
- ✓ Each station has its special features like system of working, signalling, location, geographical condition, restrictions etc.
- ✓ Hence the object of SWR is to inform all concerned staff about the special features and working to ensure safe train operations at and between stations including LC's depending upon local conditions.
- ✓ Copy of SWR or relevant rules or relevant extracts there of shall be kept at stations, cabins, LC concerned.

- ✓ It should be issued in bilingual.
- ✓ It is prepared in conjunction with GR & SR and cannot anyway supersede them.
- ✓ For interlocked station it is normally signed by Sr.DOM/DOM & Sr.DSTE/DSTE or DY.CSTE (CON)/DSTE (CON).
- ✓ For non-interlocked station by Sr.DOM/DOM & Sr.DEN/DEN.
- ✓ Pages are serially numbered, station name code is written in each page.
- ✓ Language should be simple brief and legible.
- ✓ Issued afresh after every 5 years or after issue of 5 correction slips whichever is earlier.
- ✓ Any alteration or modification done should be incorporated and acknowledgement of concerned staff should be taken.
- ✓ It has following seven appendices:
 - A- Working of Level Crossing Gates.
 - B- System of Signalling and Interlocking and communication.
 - C- Anti Collision Device (Raksha Kavach)
 - D- Duties of Train passing staff and staff in each shift.
 - E- Essential Equipments.
 - F- Working of IBH, IBS, halts, DK stations and outlying sidings.
 - G- Working of train in electrified sections. (to be jointly signed by Sr.DOM/DOM & Sr.DEE (TRD)/DEE(TRD))

ACCIDENT MANUAL

Q. 137. What is accident? What are the different classes of accident?

Ans.

Accident is an occurrence in the course of working of railway which does or may affect the safety of the railway, its engine, rolling stock, P. Way and works, fixed installations, passengers or servant or which affect the safety of others or which does or may cause delay to train or loss to the railway.

Accidents have been classified into 16 classes from 'A' to 'R' excluding 'I' and 'O'.

Accidents are classified under following heads: -

1. Train Accidents
2. Yard Accidents
3. Indicative Accidents
4. Equipment Failures
5. Unusual Incidents

Q. 138. Define 'Serious Accident'?

Ans. Accident to a train carrying passengers which is attended with loss of life or with grievous hurt to a passenger or passengers in the train or with serious damage to railway property of the value exceeding Rs. 2 crore and any other accident which in the opinion of the CCRS or CRS requires the holding of any inquiry.

TRAIN ACCIDENT:

1. CONSEQUENTIAL TRAIN ACCIDENT
2. OTHER TRAIN ACCIDENT

CONSEQUENTIAL TRAIN ACCIDENT: Includes train accidents having

1. Loss of human life
2. Human injury
3. Loss of Railway Property
4. Interruption to rail traffic

CONSEQUENTIAL TRAIN ACCIDENT: **CLASSIFICATION**

1. COLLISION = "A" class (A1-A4)
2. FIRE = "B" class (B1-B4)
3. LEVEL CROSSING = "C" class (C1-C4)
4. DERAILMENT = "D" class (D1-D4)
5. MISCELLANEOUS = "E" class (E1)

Train running over or against any obstruction including fixed structure other than included under class "C" resulting in loss of human life/grievous hurt or loss/damage of railway property exceeding more than rs.2/- crore.

OTHER TRAIN ACCIDENT:

All other accidents not covered under the definition of consequential train accidents. These includes accidents under categories: B5 & B6 , C5 to C8 , D5 , E2

YARD ACCIDENTS:

Accident occurred in the yard not involving a train, these includes (A5, B7, C9, D6)

INDICATIVE ACCIDENTS:

In real term these are not accidents but are serious potential hazards. Includes all cases of AVERTED COLLISION: Class 'F', BREACH OF BLOCK RULE : Class 'G' & TRAIN PASSING SIGNAL AT DANGER: Class 'H'

EQUIPMENT FAILURES:

Failure of Railway equipment which includes:

FAILURE OF ENGINE & ROLLING STOCK –Class 'J'

FAILURE OF P. WAY – Class 'K'

FAILURE OF ELECTRIC EQUIPMENT- Class 'L'

FAILURE OF Sig. & Telcom. – Class 'M'

FAILURE OF ENGINE & LOCOMOTIVE –Class 'J'

FAILURE OF HAULING, TRAIN PARTING, FLAT TYRE, AXLE LOCK, HOT AXLE etc.

FAILURE OF P. WAY – Class 'K'

BUCKLING, WELD FAILURE, RAIL FRACTURE

FAILURE OF ELECTRIC EQUIPMENT- Class 'L'

AC-COACH DETACH, NO TENSION > 3", OHE DAMAGE

FAILURE OF Sig. & Tel com. – Class 'M'

RRI/SSI/PANEL, AXLE/C, BLOCK/I, TRACK/C,

CONTROL PHONE >15", SIG/POINT FAILURE

UNUSUAL INCIDENTS:

Include cases related to law and order but not resulting in train accidents.

1. **TRAIN WRECKING** - Class 'N' (sabotage & Train wrecking)
2. **CASUALTIES** – Class 'P' FALLEN FROM TRAIN, RUN OVER & KNOCKED DOWN
3. **OTHER INCIDENTS** – Class 'Q' ROBBERY, MURDER, PUBLIC AGITATION

Q. 139. What are the duties of guard in case of a serious accident occurred in mid section on double line?

The following are the duties of guard in case of a serious accident: -

1. Note the exact time and km.
2. a) Protect the adjacent line/lines and the train.
b) Secure the vehicles.
c) Ensure if adjacent line(s) is /are fouled.
3. Make a quick survey, for an immediate action, of the casualties, injuries and assistance required.

4. Relay the information giving details of the accident and assistance required to the control through the most expeditious means. On double /multiple line section, a train passing on the adjacent line should be stopped and the LP/GD be given this information and also depute any railwaymen/willing person available on the train to proceed to the nearest station/police station/hospital/village seeking assistance for relief.
5. Render first aid to the injured persons taking assistance from the railwaymen/doctors/volunteers on train or near the site of accident.
6. Get the particulars of damages to the rolling stock, P.Way, OHE.
7. Arrange to shift the injured persons to the nearest hospitals with the help of all available staff and volunteers and also keep their particulars.
8. See that water, tea etc. are supplied to the affected passengers.
9. Arrange protection of railway and public property with the help of available police and railway staff.
10. Preserve all clues to possible cause of accident.
11. Depute an available railway employee on the field telephone to ensure regular flow of information.
12. Check the unaffected portion of the train and arrange to clear the same to the adjacent stations as per rules and in consultation with the control /SM concerned.
13. Remain in over all charge till replaced by a senior railway official and permitted by the competent authority.

NOTE: - In case of suspected sabotage, nothing should be disturbed except for rescuing any injured persons, till arrival of police officials and on orders from a senior railway official at the site.

Q. 140. What are the duties of SS/SM/ASM in the event of a serious accident?

Immediately after an accident or on receiving the report of an accident, the SS/SM/ASM must: -

1. Stop the entry of a train by any means, into the affected line/section from either direction; lock the commutator/handle of the block instrument controlling the affected section in 'TRAIN ON LINE' position wherever possible; ensure the signals giving entry to the line are kept at 'ON' position; ensure that 'Line Blocked' lever/slide collars are kept on the concerned levers/slides; ensure that the points are set against the entry to the affected line and clamped wherever practicable.
2. Take action to protect the traffic and safety of the property.
3. Collect the detailed information of the accident such as Time, Nature & Location, Casualties/Injuries, Obstruction, Damages and Assistance required and ensure that the adjacent line is clear before allowing any movement.
4. Inform the controller giving details of the accident and assistance required through control phone or by any other means.
5. Render first aid to the injured persons taking assistance from the railwaymen/doctors/volunteers on train or near the site of accident if the accident takes place within the station limits.
6. Arrange to send all available medical assistance to the site of accident in case the accident takes place in section.
7. Inform all concerned officials including civil and police.
8. Arrange to shift the injured persons to the nearest hospitals with the help of all available staff and volunteers and also keep the detailed particulars of the dead and injured passengers.
9. Check the unaffected portion of the train and arrange to clear the same to the adjacent stations as per rules to facilitated relief operation.

10. Take all measures for quick movement of ARME/ART to the site of accident and ensure that all documents with clear instructions are correctly issued to the LP&GD of all trains proceeding to the site of accident.
11. See that water, tea etc. are supplied to the affected passengers within his resources.
12. Remain on duty until replaced by a competent person.
13. Report the accident to all concerned by the issue of accident message.
14. Seize the TSR/Log Book, P. No. Book, Line Admission Book and Other relevant records, note the position of block instrument, signals, points, indicators & levers etc.
15. Take the statement of staff where possible.
16. Preserve all clues and arrange to protect the area with the help of police/RPF.
17. Warn all passengers in advance of their transshipment at the site of accident.
18. Ensure preservation of documents of damaged parcels, mail & goods etc.
19. Ensure chronological recording of all information received and action taken in connection with the accident, in the SM's diary.

NOTE: - In case of suspected sabotage, nothing should be disturbed except for rescuing any injured persons, till arrival of police officials and on orders from a senior railway official at the site.

Q. 141. WRITE SHORT NOTES ON THE FOLLOWING TOPICS -

i) ACCIDENT MOCK DRILL: - If, an ARME/ART has not been called out during a period of 03 months, a practice drill should be arranged immediately and the following points to be observed: -

- a) It is ordered by DRM,
- b) It is conducted under the supervision of a Senior Scale Officer.
- c) It should be kept very confidential.
- d) It should be made as realistic as possible.
- e) It is conducted to judge the alertness and preparedness of staff.
- f) The result of mock drills should be maintained in a special register and the result should also be communicated to COM/CSO.

ii) SABOTAGE: - It means criminal interference with any part of the working machinery of a railway with the object of rendering it inoperative or any act intended to cause loss of life and damage to railway property.

iii) TRAIN WRECKING: - It means willful obstruction of or tempering with the P.Way, Works, rolling stock, structures or equipments, resulting in an accident to a train with or without loss of life or damage to railway.

iv) SPAD: - It stands for 'signal passed at danger'. It comes under 'H' class accident. It is a type of 'INDICATIVE ACCIDENT'. In real term it is not an accident but it is a serious potential hazard.

v) BREACH OF BLOCK RULE: - When a train enters a block section without any authority or without proper authority to proceed or passes an IBSS without observing rules or is received on blocked line not constituting an averted collision, or when it enters or received on a wrong line at a station or a catch siding or slip siding or sand hump, such incident constitutes a case of 'Breach Of Block Rule'.

vi) AVERTED COLLISION: - It is an occurrence in which a collision would have occurred either in the block section or within the station limits between two trains or between a train and an obstruction but subsequently it is avoided by the vigilance shown by any person or persons.

The following occurrences may not be treated as an Averted Collision: -

a) If, outside the station limits, the distance between the two trains or the train and obstruction at the time the train or trains have finally comes to a stop, is 400 mtrs. or more.

b) If, within the station limits, there is an intervening stop signal at danger governing the moving train and compliance by the moving train with the indication converted by the stop signal averted the collision between the trains or between the train and the obstruction.

vii) SOUNDING OF HOOTERS AND TARGET TIME FOR TURNING OUT OF ARME/ART: (AM 4.10)

Description	Total no. Of Hooters	Duration of each hooter	Gap between two hooters	Target time for turning out
ARME with ART	5	60 SECONDS	10 SECONDS	ARME – 25 MINUTES IN SINGLE EXIT SIDING & 15 MINUTES IN DOUBLE EXIT SIDING
Crane	4	60 SECONDS	10 SECONDS	-
ART without ARME	3	60 SECONDS	10 SECONDS	ART – DAY – 30 MINUTES NIGHT – 45 MINUTES
OHE breakdown	1	120 SECONDS	CONTINUE	-

viii) REPORTABLE TRAIN ACCIDENTS: -

Under section 113 of the Railway Act 1989, the following accidents are termed as 'Reportable Train Accidents': -

1. Any accident attended with loss of any human life, or with grievous hurt;
2. Any collision between trains of which one is a passenger carrying train; or
3. The derailment of any train carrying passengers, or of any part of such train; or
4. Accidents which are attended with loss of human life in passenger trains involving train wrecking, or attempted train wrecking, cases of running over obstruction placed on the line, or passenger falling out of a train or fire in train, or grievous hurt, or serious damage to railway property of the value exceeding Rs. 2 crore and also the cases of land slide or of breach by rain or flood which cause interruption of any important through line of communication for at least 24 hours.

Q. 142. What are the duties of Section Controller in case of a serious accident?

Ans. Immediately on receipt of information regarding a serious accident, he shall: -

1. Inform Dy. CHC. with detailed particulars of the accident and the nature of assistance required.
2. Ensure that the adjacent line is clear and free from all obstructions before allowing any movement on that line.
3. Regulate the train services at suitable places, if required.
4. Advise the TI, SSE/SE/JE (SIG., P.WAY, LOCO and TRD) to proceed to the site of accident by first available means.
5. Advise the section controller of the adjacent sections to regulate the train services at suitable places, if required.
6. Ensure that the ARME/ART and other relief trains are worked out to and from the site of accident promptly and have a clear passage.

7. Keep a chronological record of all information received and action taken.
8. Obtain further details in regard to the extent of damages and progress in rescue operation and relief measures and co-ordinate with officer-in-charge at the site.
9. Arrange to remove the unaffected vehicles if any, to facilitate relief operation.

➤ **SUSPENSION OF L&B INSTRUMENT ONE SIDE:**

1. After passing LSS, if it is not raise back to ON position.
2. Before obtaining L/C, if LSS is lowered.
3. After obtaining L/C, if LSS is not lowered.
4. Without pressing the plunger if the commutator turns.
5. While giving L/c to a Motor trolley if the needle not comes to TOL position.
6. After arrival of a train if the needle not comes to line closed position.

➤ **SUSPENSION OF L&B INSTRUMENT BOTH SIDE BAD CONDITION:**

1. Beat fails.
2. Block Telephone out of order.
3. If any reason it believes that block Telephone wire contact with any other wire.
4. Block instrument, battery country seal Broken in the absence of S&T dept.
5. Train arrive without line clear given for it.
6. Erratic movement of needle.
7. Before arrival of a train, if the instrument comes to Line Closed Position

➤ **SUSPENSION OF L&B INSTRUMENT BOTH SIDE GOOD CONDITION:**

1. TSL working.
2. BSI wants to open the Block Instrument.
3. P&T dept. wants to check the Telephone Cable

MARSHALLING YARD

Q. 143:- What is YARD, what do you mean by marshalling yard? How many types of marshalling yards are there? What are the various components of marshalling yard, describe in brief?

YARD: - It is a place or the activity centre on a railway system, where the trains or rolling stock or group of rolling stocks are received, reformed into trains or loads after marshalling and are despatched to their destinations.
OR It is a particular area laid out with a network of tracks divided into different grids for receiving, sorting, forming and despatching of trains.

MARSHALLING YARD: - Yards are nominated as marshalling yards on the basis of the work done and wagons dealt with. As a statistic, a yard dealing with 8000 eight-wheeler wagons and over per month in respect of BG yards and 5000 eight-wheeler wagons and over per month in respect of MG yards are termed as marshalling yard.

Marshalling yards are classified under three groups on the basis of the method of sorting out trains: -

- a) **Flat yard:** - These are generally laid on flat or level land where shunting operations are carried out with the help of engine by push and pull method. These are economical in space but slow in working and wasteful in shunting engine hours.
- b) **Hump yard:** - These are constructed by providing gradients between reception and the sorting and despatch lines and the grids. The gradients are created by constructing an artificial hump. The hump is constructed in such a manner that the wagons roll down of their own to specified sorting lines from the apex of the hump after being pushed up by the shunting engine. These are economical in shunting engine hours as compared to flat yards.
- c) **Gravity yard:** - These are constructed where the natural shape of land permits a suitable falling gradient extended over a sufficient length. The falling gradient helps to use the yard to the fullest extent in marshalling wagons/trains.

Hence, the use of shunting engine is minimised. These are the most economical yards.

COMPONENTS OF MARSHALLING YARD: -

- i) **RECEPTION YARD:** - Reception yard comprises of the lines on which the incoming trains are received. Separate grids may be provided in the reception yard for through trains and terminating trains. Separate reception yards may be provided in the for trains coming from different directions.
- ii) **SORTING YARD:** - In this yard, the trains are broken up on the different sorting lines for various directions or specified destinations, as per marshalling order.
- iii) **DEPARTURE YARD:** - In this yard, load can be held ready for departing trains. In large marshalling yards, different departure yards are provided for trains for different directions.
- iv) **SHUNTING NECK:** - It is a line, leading to sorting lines on which actual shunting may be done clear of any running lines.
- v) **TRANSFER LINES:** - These lines are provided for transferring wagons from UP yard to DN yard and vice versa, in case of two separate marshalling or hump yards.
- vi) **BY PASS OR AVOIDING LINE:** - It is a line, which joins the shunting neck at one end and the main hump line short of the king point at the other end.
- vii) **ENGINE RUN ROUND LINE:** - It is the line reserved for movements of incoming and outgoing train engines to and from the yards or the loco shed.
- viii) **KING POINTS:** - It is the first pair of points a wagon meets with after passing over the hump. They divide the sorting yards into two portions.
- ix) **QUEEN POINTS:** - It is the second pair of points a wagon meets with on its way downwards, which further divide the sorting yard into four portions.
- x) **JACK POINTS:** - The third pair of points a wagon meets are called the jack points and these serve to divert the rolling wagons into the different grids of the sorting yard. Points beyond jack points are called 'TEN POINTS'.
- xi) **RETARDERS:** - In mechanised yards, retarders or rail brakes are installed to reduce and keep the speed of the humped vehicles under control. It may be automatic or manually operated.
- xii) **BRAKEVAN SIDING:** - In this siding brakevans of incoming terminating trains are detached and attached to the originating trains.
- xiii) **SPECIAL STOCK SIDING:** - These are provided for keeping special type stock, cattle wagons, wagons containing explosives, petroleum etc. which cannot be humped.
- xiv) **SICK LINES:** - Sick wagons are sorted out and kept in the sick line for repairs.
- xv) **SKIDS:** - in yards, where retarders are not provided, skids are placed on the sorting lines to control the speed of the humped wagons.

Q. 144. What are the important registers maintained in the marshalling yard? Describe in details?

Ans. The following registers are maintained the marshalling yard: -

- 1. RUNNING BALANCE REGISTER:** - It will be maintained by Hd. TNC or TNC in-charge. All stock entering into the yard i.e., received by incoming trains or from shed, tranship shed, sidings including departmental sidings should be posted with blue or black pencil showing date, train no., loads or empties against different columns direction wise as directed by DOM or CHC of the division.

The entries of outgoing trains or when the stock is leaving the traffic yard for placement in shed, sidings, departmental siding and tranship shed etc., shall be done by the red pencil.

The posting will be done from time to time commencing from 00-00 hrs. and every 4 hrs. the balance will be closed after adding the incoming stock while departing stock is subtracted and the balance repeated to the control for the purpose of ordering and controlling of incoming trains as necessary.

This register forms the basic records to show at any time the condition of the yard, controlling the loads and empties offering for ordering out trains, the trend of traffic and loads held up as well as to prepare certain statements and statistical figures.

2. **WAGON LINK CARDS:** - It contains particulars of each wagon dealt with in a yard namely, owning railway, wagon number, load/empty, type of wagon, from and to station including its arrival and departure timings and total detention.

It should be maintained in 10 groups digit wise. Separate link cards should be maintained for loaded and empty wagons, as well as for special type stock. In orders to keep a watch on loaded wagons detained in the yard link cards are also maintained for-

Wagon detained over 24 hours.

Wagon detained over 48 hours.

Wagon detained over 72 hours.

TNC's HAND BOOK: - Particulars of all wagons entering or leaving the marshalling yard must be recorded in this book directly from the trains by which they are received or despatched. Wagons work into or out of the yard and to the outlying shed and sidings by pilots are to be treated in the same way as wagons arriving or leaving by trains. Separate books must be maintained for incoming and outgoing trains, each book shall be earmarked for a particular direction. Basic records of these books are posted in running balance register and wagon link card.

3. **REGISTER SHOWING RECEIPT AND DESPATCH OF WAGONS:** - It is maintained in form OP/T442 to show the detention at different stages i.e. from arrival to placement, release and despatch of all wagons. From this register details of detention to goods stock in goods shed, sidings, departmental siding and tranship shed and sick lines can be checked. It is jointly maintained by the Operating/Commercial, Carriage & Wagon staff as the case may be.

4. **LOADED WAGONS DETENTION REGISTER:** - It is maintained direction-wise to watch the detention to through loaded wagons. From this register the yard detention return is submitted to the DOM with a **copy to COM at the end of each ten day period, i.e. 10th, 20th and the last day of the month.**

5. **SHUNTING ENGINE LOG BOOK:** - A log book for each shunting engine should be maintained by the YM or the shunting jamadar of each engine. In this book the daily performance of the shunting engine should be recorded with timings, it arrives into the traffic yard till the time it leaves the traffic yard for the loco shed with the detention in the yard on loco account.

6. **YARD PERFORMANCES REGISTER:** - It must be maintained at all marshalling yards.

Yard Performance Register is a register, which is maintained by TNC branch in marshalling yard with various columns for showing performance in the yard.

The following columns are maintained:

- a) Date
- b) Number of wagons at 0(odd) Hours.
- c) Number of wagons detached from train.
- d) Number of wagons received by pilot from outlying siding.
- e) Number wagon to dispatch.
- f) Number of wagons placed from yard for siding.
- g) Total number of wagons remaining at 0(odd) Hours.
- h) Total number of wagons dealt.

- i) Number of trains received.
- j) Number of trains dispatched.
- k) Number of shunting hours by shunting engine.
- l) Number of shunting hours by private engines.
- m) Remarks etc.,

7) WAGON WAY BILL: - (OP/T 437 or VEHICLE GUIDANCE)

- It as an important train paper on prescribed form (OP/T 437) to be carried by every Guard of train. The individual numbers of vehicles as per composition of trains are recorded in it. It is prepared in triplicate under carbon process, one for guard, and one for station record and other for tele-printer.
- It must be carefully prepared by TNC, who attends the outgoing train after being informed in the yard.
- It consists of different columns such as wagon no., Owning Railway, type of wagon, Load/Empty, From and To, Via, Numerical code of station, 4-wheeler bogie or special type, tare, weight/weight of container, gross weight, total Load in tonnage is to be shown in list. Wagon Way Bill must be signed by TNC or who prepares vehicles entered in the wagon way bill must be in the order in which they are placed from the engine to the brake van.
- On arrival at the station, the guard will make over the same to the station master/yard Master/other yard staff deputed for the purpose and must take signature in Rough Journal book for through yard pulling the train. It will be transferred from guard to guard and preserved at the destination as an important record.

POOLED WAGON?

These wagons belong to the central pool of all Indian Railways. These wagons can be utilized in through booking from any station to any station irrespective of wagon.

“P” mark not available on pooled wagons

NON-POOLED WAGON?

These wagons are excluded for the central pool of all Indian Railways. These wagons are marked “NP”. These wagons should not be utilized for through booking all over Indian Railways. These wagons are intended for local booking only. When any Non-pooled wagon is received from foreign Railway station, it should be return to the owning railway by first means whether it is an empty or in loaded condition.

ESSAY ON WAGON CENSUS? HOW IT IS DONE?

- Broad Gauge wagon census including brake van, held every year on 30th November, at 12 hours noon exactly (Coaching: 31st October, every year).
- Any difference found in wagon Census shall be adjusted by the Joint Director (Computer Services)/Railway Board.
- After Census, enumerations are checked with the records of individual railways.
- If by any reason wagon are remain untraced, those shall classify under the following categories: -
 - Stock in existence but not enumerated
 - Stock not in existence but enumerated
 - Double (Duplicate) enumeration.
- Computer Services/ Railway Board rectify such irregularities as far as possible after scrutiny the records of each railway.
- By taking each census result as opening balance figure after adjusting with the hire charges amount (Charges collection in utilization of wagon by other railways)

- The above said hire charges-addition or deduction is calculated by the net daily difference in interchange and aggregated carry forward of each railway. And once in every month these settlements are made over.
 - Hence, by the time the current Wagon/ Brake Van balances to be settle down with the Wagon Census results and Hire Charges amounts.
 - The result of the Census is notified in two stages as I) Preliminary & II) Final
 - **Preliminary Census** results/balances announced immediately after enumeration and the total number of wagons railway wise will be known by this figure.
 - **Final Census** results/balances announced after tracing of wagons through checking in either 'missed enumeration' or 'enumerated incorrectly' figures.
 - Computer Services/ Railway Board finalizes the result and anywhere the concerned wagon are found missing in two successive censuses— are deleted from the existing stock of individual Railway. The list of such wagons is circulated by Joint Director (Computer Service)/Railway Board
- INTERCHANGE OF COACHING AND GOODS STOCK.RETURNS AND DAILY STOCK REPORT*

INTERCHANGE OF ROLLING STOCK DEFINITIONS:(OM: 13.02)

- i)“**Owning Railway**” means the Railway to which a vehicle or wagon belongs.
- ii)“**Forwarding Railway**” means and includes each Railway sending a vehicle or wagon to another Railway, whether on the outward or homeward journey.
- iii)“**Receiving Railway**” means and includes each Railway receiving a vehicle or wagon from another Railway, whether on the outward or homeward journey.
- iv)“**Booking Railway**” means the Railway on which traffic originates.
- v)“**Destination Railway**” means the railway on which traffic terminates.
- vi)“**Intermediate Railway**” Intermediate railway” means any Railway between the booking Railway and the destination Railway.
- vii)“**Working Railway**” means a Railway working a junction.
- viii)“**Using railway**” means a Railway using a junction worked by another Railway.
- ix)“**Rolling Stock**” includes both coaching stock and goods stock.
- x) (a) “**Coaching Stock**” means all coaching vehicles such as Postal, Motor and Coaching traffic vans, Horse boxes, and Military cars in addition to passenger carrying vehicles. Coaching vehicles belonging to different Railways and of different kinds are identified by a code signifying what type of vehicle it is and on each vehicle is also painted the initial of the working Railway and a number.
 - Thus S.E. FZ. 423 indicates passenger-coaching vehicle belonging to South Eastern Railway with accommodation for first, and second classes bearing number 423
- x) (b) Goods wagons intended for coaching traffic should be marked as such and used for coaching traffic only. They will be treated as coaching stock for interchange purposes but damages and deficiencies will be charged for at scheduled areas for goods stock
- xi) “**Goods Stock**” means rolling stock, other than coaching stock, irrespective of contents, whether attached to Passenger or Goods trains, and includes tanks, flats, vans and such like vehicles. Each type of wagon carries a code indication, the initial of the owning Railway and the wagon number.

e.g. SE/C/12576 indicates that a S.E.Rly four wheeler covered wagon bearing number 12576

RULES FOR INTERCHANGE OF COACHING STOCK? (OM: 13.04)

- (1) There are certain rules laid down for interchange of coaching stock between Individual Railway, however mutual arrangements are in accordance with rules.
- (2) The General Rules for interchange that empty coaching vehicles shall be returned to its owning Railway by the shortest route
- (3) Coaching vehicles may be returned loaded by the receiving Railways to a station
 - (i) On the shortest route back to the owning Railway, or
 - (ii) On the route via which received, or
 - (iii) On the owning Railway.
- (4) (i) A vehicle which returned to the owning Railway by the shortest route unless reloaded to or via the owning Railway
- (ii) Special vans i.e., luggage parcel, motor vans and horse boxes booked by the owning Railway to another Railway shall be returned to the owning Railway as quickly as possible, that is a day for every 121 kilometers or part 121 kilometers from the interchange junction to the destination station plus 2 days at the destination.
- For example, if the distance between the interchange junction and, the destination is 300 kilometers, the total time allowed for the vehicle to be returned is, 3 plus 2=5 days.
- (5) In the event of interruption of through communication occurred on whatever Railway of about 48 hours, dispatch telegraphic advice of the fact to all Railways whose vehicles are detained on account of interruption.
- (6) If a Railway affixes any fittings on interchange stock in respect of which special instructions are necessary, for that send copies of such instructions to the Railways to which such stock is interchanged

RULES FOR INTERCHANGE OF GOODS STOCK? (OM: 13.07)

- i) Pooled wagons can be used by all Railways indiscriminately immaterial of the ownership. This applies to BVs also.
- ii) Non-pooled wagons may be loaded by the receiving Railway to a station either:
 - iii) On the route via which received
 - iv) On the owning Railway
- v) Empty non-pooled wagons may not be diverted to other than the owning Railway to secure a load except by special arrangements and with the approval of the Director.
- vi) If loads are not available, they shall be returned to the owning Railway by the shortest route.
- vii) If goods loaded in the non-pooled wagons are required to be rebooked to another destination a consignment may be sent on in the original wagon
- viii) The owning Railway shall bring to the notice of the adjoining Railway whenever the non-pooled wagons are booked in contravention to rules.
- ix) In the event of interruption of through communication from any cause whatsoever, the Railway on which interruption occurs shall advise within 48 hours of occurrence by telegraph to the owing Railway.
- x) Local traffic wagons shall not be used for interchange. If mutually agreed up on two or more trips may be permitted for interchange or short distance traffic during a specified period

- BSLB=BLOCK SECTION LIMIT BOARD
- VTO =VIGIBILITY TEST OBJECT
- WTT=WORKING TIME TABLE
- ODC=OVER DIMENTIONAL CONSIGNMENT
- EOT=ENGINE ON TRAIN
- UTS=UNRESERVED TICKETING SYSTEM
- CC=CLOSED CIRCUIT
- CC=CARRYING CAPACITY
- CCC= CHIEF COMMERCIAL CONTROLLER
- RRI=ROUTE RELAY INTERLOCKING
- CYM=CHIEF YARD MASTER
- COIS=COACHING OPERATIONS INFORMATION SYSTEM.
- POH=PERIODICAL OVER HAUL
- DC=DEMMURAGE CHARGES
- ICMS=INTEGRATED COACHING MANAGEMENT SYSTEM
- TMS=TERMINAL MANAGEMENT SYSTEM
- CONCOR=CONTAINER CORPORATION OF INDIA LIMITED
- VG=VEHICLE GUIDANCE
- BPC=BRAKE POWER CERTIFICATE
- TNC=TRAINS CLERK
- PDD=PRE-DEPARTURE DETENTION
- LAP=LEAVE ON AVERAGE PAY
- CMS=CREW MANAGEMENT SYSTEM
- RMS=RAKE MANAGEMENT SYSTEM
- DRS= DEFICIEANCY IN ROLLING STOCK
- NP=NON POOLED
- SPART= SELF PROPELLED ACCIDENT RELEIF TRAIN
- CRIS= CENTRE FOR RAILWAY INFORMATIONS SYSTEM
- IOH=INTERMEDIATE OVER HAUL
- CRS= COMMISSIONER OF RAILWAY SAFETY
- RVNL=RAIL VIKAS NIGAM LIMITED
- SWR=STATION WORKING RULES
- N'BOBR= PNEUMATIC BOGIE OPEN BOTTOM RAPID DICHARGE
- N'BOBS M1= PNEUMATIC BOGIE OPEN BOTTOM SIDE DICHARGE MARK ONE
- BOXNHL= BOGIE OPEN PNEUMATIC HIGH AXLE LOAD WAGON
- BOXNHS= BOGIE OPEN PNEUMATIC HIGH SPEED WAGON
- BTPN=BOGIE PETROLIUM TANK WAGON PNEUMATIC
- POL WAGON= PETROLIUM,OIL, LUBRICANT WAGON.
- BFNS=BOGIE FLAT WAGON PNEUMATIC SYTEM
- SLR=SECOND CLASS LUGGAGE CUM BRAKEVAN
- SLRD=SECOND CLASS LUGGAGE CUM BRAKEVAN WITH DISABLED
- WGSCN= VESTIBULE SELF GENERATOR SEOND CLASS 3TIER SYSTEM
- WLRRM= VESTIBULE LUGGAGE CUM POWER CAR WITH BRAKEVAN (GUARD'S COMPARTMENT)
- WGACCN= VESTIBULE SELF GENERATOR AIR-CONDITION 3 TIER (3A)
- WGACCW= VESTIBULE SELF GENERATOR AIR-CONDITION 2 TIER (2A)
- WGFACCW= VESTIBULE SELF GENERATOR 1ST CLASS AIR-CONDITION CUM 2 TIER AC (1A+2A)OR HA
- WGACZ= VESTIBULE SELF GENERATOR AIR-CONDITION CHAIR CAR
- WCB= VESTIBULE PANTRY CAR

- VVN=MILK VAN
- WCD= VESTIBULE DINING CAR
- VPU= PARCEL VAN UNIT
- VPH= HIGH CAPACITY PARCEL VAN
- WGFAC= VESTIBULE SELF GENERATOR 1ST CLASS AIR CONDITION (H)
- WFC= VESTIBULE 1ST CLASS
- GS=2ND CLASS
- GSRD= 2ND CLASS LUGGAGE ROOM CUM DISABLED
- WGSCZ=VESTIBULE SELF GENERATOR BROAD GAUGE SECOND CLASS CHAIR CAR
- SATSaNG= SOFTWARE AIDED TRAIN SCHEDULING AND NETWORK GOVERNANCE

Carriage and Wagon

Q.145 what is the principle of working of air brake system? Describe briefly the various components of air brake system.

Ans: In air brake system compressed air is used for getting brake force. The compressed air is supplied to the train brake pipe from locomotive. The brake pipe pressure is maintained at 5Kg/cm square. The magnitude of braking force increases in step with the corresponding reduction in brake pipe pressure & vice versa.

Charging:

The compressed air from the locomotive, through hose assemblies & cut off angle cocks of successive wagons, charge brake pipe throughout the train length. In individual wagons the compressed air, after passing through dirt collector for filtration, charges the auxiliary reservoir through distributor valve(DV) . During charging DV also keeps the brake cylinder vented to the atmosphere thus keeping the brake released.

Application:

A reduction of brake pipe pressure whether intentional or accidental will initiate brake application by admitting the compressed air into the brake cylinder from auxiliary reservoir through the distributor valve. The piston movement in(out ward) brake cylinder causes application of brake through brake rigging.

Release:

When the brake pipe pressure increases the DV reacts to the pressure increase & vents the brake cylinder pressure to atmosphere. This releases the brake.

Air Brake Equipments

1. Distributor Valve (DV)

The DV is the most important functional equipment of the system & can be termed the “Heart “of the system. It senses the Brake pipe pressure variations & works automatically to provide brake application as well as release.

2. Brake cylinder(BC)

At the time of brake application, compressed air from the Auxiliary Reservoir via DV, enters the Brake cylinder & moves its piston out wards. The force on the piston in the brake cylinder is multiplied & transmitted to brake blocks via the brake rigging. In every there is one piston .when piston works then only brakes will be applied,

3. Auxiliary Reservoir:

In single pipe system it receives the supply of compressed air from the brake pipe through DV, In twin pipe it is connected with Feed pipe.

4. Angle Cock

The Angle cock is provided on the brake pipe of either end of each wagon which is used for opening or closing the brake pipe.

5. Hose coupling

The Hose coupling is provided to connect the Brake pipe hoses of consecutive wagons.

6. Dirt Collector

It removed dust from the compressed air coming through the brake pipe.

7. Slack Adjuster Barrel: It is part of brake rigging arrangement of body mounted brake cylinder system. It is provided to adjust gap between brake block and wheel automatically. These are two types 1. DRV-450(coaching) 2.DRV-600(goods). Its main advantage is to release brake binding by rotating it anti clock wise manually.

8. Guard's Emergency Brake Valve & Pressure Gauge

The emergency valve is provided in the brake van for the guard to apply brakes. One gauge is provided in the brake van for the guard to check the pressure in the brake pipe.

Q.146 What is Brake Continuity Test? Under what conditions this test should be done? Describe its procedure.

Ans: The following procedure should be adopted while attending the continuity test on A/B trains.

1. Create prescribed BP pressure in engine & brake van as under

	Engine	B/Van
Up to 56 Wagons	5.0 kg/cm square	4.8 - kg/cm square
Beyond 56 Wagons	5.0 kg/cm square	4.7 - kg/cm square
Coaching Trains	5.0 kg/cm square	4.9 - kg/cm square

Upto 18 coaches

Beyond 18

5.0 kg/cm square

4.8- kg/cm square

Coaches

2. Move A9 handle to drop BP pressure by 1 kg/cm square & remain at 4 kg/cm square.
3. After the needle stabilised, close L/T cock.
4. Press the handle of guard's emergency valve until all air is exhausted reducing the pressure to zero (0 kg/cm square).
5. Then it must be observed that the BP pressure in engine has dropped to zero & does not rise again. If the BP pressure does not fall, this can be due to angle cock being closed anywhere in the train.
6. After correction of this fault step 4 & 5 must be carried out again.
7. Move 9 handle to running position & check that required pressure is registered in engine & B/Van again.

This test is carried out

1. While attending pressure of originating train.
2. After completion of shunting on a through train in effect of detachment or attachment.
3. When train is stabled & cleared.
4. When changing of engine.
5. Whenever the guard suspects that the pressure disturbed in M/T when the train stopped at any place.

This test is to be conducted by TXR staff at the station provided with C&W staff & by guard & driver at other station/sidings.

Q. 147 What are various factors influencing brake binding? What steps would you take to release it manually to clear the station?

Ans: Definition:-i) Brake not releasing on recharging of vacuum/BP pressure or delayed/ sluggish release is called brake binding.

ii) When A-9 valve is kept in normal position, system is fully charged, even though if brakes of any vehicle is not released then this state is called brake binding.

Symptoms: -

- ❖ Wheel skidding
- ❖ Vibrations in brake rigging.
- ❖ Vibrations in trolley frame/wagon
- ❖ Screeching sound
- ❖ Sparks along the rail (clearly visible during night time only)

Causes: -

- ❖ Hand brake ON
- ❖ Brake shaft or piston jammed/seized
- ❖ E/L box wrong setting
- ❖ Tampering of E/L box sleeve nut.
- ❖ Tight pin-hole adjustment

- ❖ SAB stuck up.
 - ❖ DV malfunctioning
 - ❖ Insufficient release time allowed by the driver after brake application & before notching up..
 - ❖ Excess leakage
- BP builds up very slow.

Procedure for manual releasing of brake/ piston manually releasing of brake binding in case of Air Brake System: -

1. Release the brake/ piston manually by pulling the distributor valve (DV) release hook.
OR
2. Put the DV isolating handle in parallel position / release position & rotate the hand brake of the wagon OFF & ON in both position.
OR
3. Put The DV isolating handle in release position & rotate the SAB in anti clock wise direction keeping the face on long pull rod side.
OR
4. Loose vent nut of brake cylinder.
OR
5. Loose sleeve nut of E/L box.
OR
6. Uncouple the pull rod pin of slack adjuster barrel head pin & secure the pull rod with safety bracket or by steel wire after manual releasing of the brakes. The affected wagon made isolate/dummy by putting the DV isolating handle in dummy position to avoid further detention for further brake binding.

Q.148 What is Passenger Emergency Alarm System? Describe briefly.

Ans: A passenger emergency alarm signal device (pilot valve) is fitted on the end wall at cant rail level of each coach & is connected through a 10mm common control pipe to passenger emergency alarm valve & then to the main brake pipe. A cam operated electrical limit switch is also provided on the end wall. For actuation of audio visual device provided in loco cabin through wire inter Coach Elec. Coupler, dummy coupler carrier & shorting plug for continuity of the system is provided.

Working Procedure: – When a passenger pulls alarm chain, the alarm spindle rotates from horizontal to vertical position. This in turn will pull down operating bar of PEASD. As a result lever assembly rotates in anti -clockwise direction. There by the pistol valve moves off & opens the passage for air from the 10mm pipe connecting to PEASD. As PEASD is connected to PEAV by control pipe, the pressure at top of diaphragm of PEAV is decreased which lift the valve assembly there by allowing brake pipe pressure to vent to atmosphere . During ACP the micro switch operates the audio signal device provided in the loco

cabin & the driver gets indication through the buzzer sound & indication light. The driver also gets indication through the overshooting of movable (white) needle of air flow indicator.

Resetting-1.By pulling wire rope which is connected with RE SET KEY.

2. The PEASD can be reset with the square key no.004 by turning in clock wise direction. This key is normally kept with the guard/TXR of the train. On all new coaches the PEASD has fixed key.

Isolating- In case the PEASD is defective and Could not be rest with the key no.004, the isolating cock provided on the coach under frame just below the PEAV is to be closed to isolate the air pressure.

Q.149:- What is GDR? Which C&W items are attended by Guard & Driver during GDR Check?

GDR is a Guard and Driver check report which is done to clear any Goods train from road side station, When it is stabled for different time period.

Items to be checked by GDR in the rake :-

<u>Item no</u>	<u>Description of items</u>	<u>Remarks</u>
1.	Rake Integrity	
2. a	EOT at	
b.	Vacuum Air Pressure ready at:	
c.	Vacuum/ Air pressure in locomotive:	
d.	Vacuum/ Air pressure in Brake van:	
e.	Total no of Cylinders:	
f.	Total No of operative Cylinders:	
g.	Total No of Inoperative Cylinders (With wagon details):	
h.	% of Brake power	
3.	Loose fittings/hanging parts which may Endanger Safe running of train:	
4.	Doors of all wagons are closed & locked.	
5.	All CBCs are properly coupled & locked.	
6.	Empty load device handle is in proper position as required:	
7.	Hand Brakes are in released condition:	
8.	Continuity of Brake pipe pressure is confirmed through VHF/whistle code before starting .All angle cocks should be in open condition except front of Loco and rear of Bk.van.	
9.	Any other abnormalities noticed & action taken:	
10.	Brake power: Ascertained where ever required.*	
	○ When BPC becomes invalid.	
	○ A load stabled at a non TXR station for more than 96 hrs.	

When to be conducted:

- i. A load stabled for more than 12 hrs at a non TXR point.
- ii. A rake unloaded/back loaded/tipped at non TXR point.

When not to Conduct:

- a) A load stabled at TXR points
- b) A load stabled at non -TXR point up to 6hrs.

When to conduct and what to do?

- i) If stabled for 0 to 12 hrs---Only continuity test to be done,
- ii) If stabled for 12 to 24 hrs—GDR to be done but brake power check is not essential.
- iii) If stabled for 24 to 96 hrs--- GDR to be done and brake power check is must.
- iv) If stabled for more than 96hrs---GDR to be done, brake power check is must and train will run up to next examination point.

Q.150 What are the comparative advantages of air brake system over vacuum brake system?

Ans: Conventional vacuum brake has several limitations like vacuum trouble, brake power fading, increased application & release timings etc. This system is not so safe & reliable to have long & fast trains at high speeds .So the IR have adopted the air brake system due to its following major advantages.

- ❖ High braking force
- ❖ Short braking distance
- ❖ Quick release & quick application of brakes.
- ❖ Very little brake power deterioration during run.
- ❖ Low exhaustibility of brake power under continuous or repeated brake applications.
- ❖ Uniform brake power over entire train length.
- ❖ Simultaneous brake application through out the train.
- ❖ Easy detection of leaky hoses/joints due to higher audible leakage sound.
- ❖ No air pressure trouble at higher altitudes above MSL.
- ❖ Simple brake rigging
- ❖ Light & compact equipments
- ❖ High speed operations.
- ❖ Minimum “run in” & “snatch” action during braking.
- ❖ Very less chance of brake fade.

Q.151:- How would you differentiate between vacuum brake & air brake system?

Ans:-

FP system	BP system
1. V/B is worked by exhaustion of air.	1. A/B is worked by Compression of air.
2. Exhausters provided in the engine create vacuum in the system.	2. Compressors provided in the engine charge the system.
3. During application, air goes into the system.	3. During application, air comes out of the system.
4. Brake application is caused by the inward piston movement.	4. Brake application is caused by the outward piston movement.
5. It derives its braking force from the atmospheric pressure.	5. It derives its braking force from the pressure differential across the DV main diaphragm.
6. Vac cylinder is suspended in Vertically.	6. Brake cylinder is mounted in Horizontally.
7. Gravitational force helps in releasing the piston.	7. Return spring is provided for the purpose.
8. During release piston comes out.	8. During release, piston goes in.
9. No provision for isolation of Wagons.	9. Isolating & angle cocks are provided for this.
10. Vac cylinder is directly Connected to train pipe through Release valve	10. Bk cylinder is connected to aux reservoir & exhaust through DV.
11. Train pipe is of 50 mm dia.	11. Brake pipe is of 32mm dia.
12. Hose pipe, universal coupling & IR washers are provided to couple the system.	12. Air hose, palm end & MU washers are provided to couple the system.
13. The trailing hose coupling of BV/LV is placed on the dummy plug.	13. The trailing hose coupling of BV/LV is placed on suspension hook & the corresponding angle cock is closed.
14. The release valve is pulled to release brakes on a standing load by equalising the pressure above & below the piston.	14. The DV hook is pulled to release brakes on a standing load by venting out brake cylinder pressure.
15. For ACP resetting, no key is required.	15. For ACP resetting, key No. 004 is required.

Q.152 How would you differentiate between FP & BP system?

Ans:

FP system	BP system
1. Its colour is white.	1. It colour is green.
2. Pressure in FP should be 6 Kg/cm ² .	2. Pressure in BP should be 5Kg/cm ² .
3. It is fitted in only twin pipe air brake system.	3. BP is fitted in Single Pipe and twin pipe (both) Air Brake System.
4. FP Pressure is required for quick release of brakes.	4. BP Pressure is require for brake application and release.
5. FP is directly connected with AR too.	5. BP pipe is connected with DV only.

Q.153 What is Brake Power Certificate? Which columns are filled by TXR on the BPC at originating point?

The following columns are to be filled by the TXR on the BPC at the examining station:

- No fresh BPC should be issued during revalidation.

Intensive Rake	-	Green
CC Rake	-	Yellow
Premium Rake	-	Green with Red Diagonal Band

Ans:

- I. Ensure all BP hoses are connected with each other.
- II. Keep the rear most hose on suspension hook.
- III. Ensure all angle cocks are in open position except the rear most, which must be closed.
- IV. Keep the handles of DV isolating cocks of all the wagons vertically down ward.
- V. Attach engine with the train. (EOT)
- VI. Connect BP air hoses of engine with first wagon. Bring driver's brake valve handle to charging position & charge the System.
- VII. Ensure prescribed BP pressure is registered in engine & brake van respectively as under:-

- 127 -

Above 56

5Kg/cm²

4.7 Kg/cm²

VIII. Bring drivers brake valve handle to braking position & drop BP pressure by 1.6 Kg/cm². Brakes should be applied in full rake.

IX. Count the no of operating cylinders.

⇒ Check the piston stroke. It should be as follows:-

PISTON STROKE(mm)

Type of wagons	Piston stroke	
	<u>Empty</u>	<u>Loaded</u>
BOXN, BCN/BCNA, BRN, BTPGLN	85±10	130±10
BTPN	87±10	117±10
BOY	90±10	135±10
BVZC	70±10	
BOBRN	100±10	110±10

⇒ The brake blocks should bind the wheel tread effectively.

X. Apply the following formula to calculate % of brake power in the train:-

$$\text{Brake Power \%} = \frac{\text{No of Operative Cylinders} \times 100}{\text{Total No of Brake Cylinders}}$$

Brake Power %

Sl.No.	Type of Rake	TXR Examination Station	Road Side Station
1.	Intensive rake	90%	75%
2.	Premium rake	95%	75%
3.	Close circuit Train	100%	90%
4.	Coaching Train + BLC Wagon	100%	90%

Q.155:- What is Twin Pipe System & its advantages?

Ans:- In Air brake coaching stock, in addition to brake pipe (BP), an extra pipe called feed pipe (FP) is fitted. This is called Twin Pipe System. In this

System BP is set at 5 kg/cm² & FP at 6 Kg/cm². FP is fitted at higher level than BP over rail level in coaching stock. BP colour is green & FP, white.

Advantages:-

1. Aux reservoir is charged at higher pressure (6 kg/cm²).
2. Aux reservoir is charged uninterrupted throughout the operation even during brake application.
3. Less releasing time.
4. Chances of brake binding are minimised.
5. Brakes can be applied again and again more quickly, giving more effective control to the driver over the train negotiating long stretch of DN Gradients.

Q.156:- How will you compare between single pipe and twin pipe system?

Ans:- 1. **Principle of working:**

Single Pipe:- The operation is same as that of the twin pipe system except that the auxiliary reservoir is charged through the D.V. instead of feed pipe, since there is no feed pipe in single pipe system.

Twin Pipe:- The Brake pipe is charged to 5g/cm² by the driver's brake valve. The auxiliary reservoir is charged by the feed pipe at 6kg/cm². through a check valve and choke . The brake cylinder is connected to the atmosphere through a hole in the D.V. when brakes are under fully released condition. To apply brakes, the driver moves automatic brake valve handle either in steps for a graduated application or in one stroke to the extreme position for emergency application. By this movement the brake pipe pressure is reduced and the pressure differenced is sensed by the D.V. against the reference pressure locked in the control reservoir. Air from the auxiliary reservoir enters in to the brake cylinder and the brakes are applied. At the time of release the air in the brake cylinder is to be vented progressively depending upon the increase in the brake pipe pressure. When the brake pipe pressure reaches 4.8kg/cm² the brake cylinder is completely exhausted and brakes are fully released.

2. Charging auxiliary reservoir

Single Pipe – Discontinued during brake application;

Twin Pipe – Uninterrupted

3. B.C. and A.R. pressure equalisation

Single Pipe – Occurs during prolonged brake application;

Twin Pipe – Does not occur.

4. Release of brakes (reduction in brake cylinder pressure)

Single Pipe – Proportionate to build up of A.R. pressure

Twin Pipe – Auxiliary reservoir is continuously charged through feed pipe

5. Leakage in brake cylinder during application

Single Pipe – During emergency application, feed for auxiliary reservoir from brake pipe is discontinued. Leakages in brake cylinder will therefore reduce braking force since auxiliary reservoir may not be able to equalise the leakages.

Twin Pipe – Auxiliary reservoir is continuously charged through feed pipe and hence leakages in brake cylinder can be equalised even during emergency application ensuring full brake force.

6. Colour

Twin Pipe - Brake pipe – Green; Feed pipe – White

7. Pressure

Single Pipe – Brake pipe – 5kg/cm² Twin Pipe – Brake pipe – 5kg/cm²
Feed Pipe – 6kg/cm²

Short Notes:-

Air Brake System

Air brake is braking system used on rolling stock (Goods & coaching) in which the media of brake application is compressed air.

There are 2 types of A/B system available in world Railways. UIC has adopted “GRADUATED RELEASE” & AAR the “DIRECT RELEASE” system. Both direct & graduated releases are further available in two forms:

- ❖ Single Pipe
- &
- ❖ Twin Pipe

In graduated release, the brakes can be released in steps at the discretion of the driver whereas in direct release, the brakes release completely, thus providing no intermediate control to the driver.

Both the types are graduated in application.

CC Rake:- Some freight trains are used continuously in dedicated operations over a closed loop journey. These are known as close-circuit rakes & typically consists of 41BCN or 43 BCNA wagons (cement) or 59 NBOX wagons (coal) or 47 BTPN tankers (POL). These rakes are subjected to a more rigorous maintenance regime, known as super-intensive examination & have BPC issued for 6000 kms/30 days or 7500kms/35 days at a time.

E/L Box: - It is a device which is incorporated in the brake gear & serve to vary the brake ratio when required. This is manually operated for adjustment when empty or loaded.

When the gross load is below 42.5 ton then it is treated as empty.

1. Handle to be kept in black colour side for loaded wagon
2. Handle to be kept in yellow colour side for empty wagon
3. If the handle is set in wrong position it effects braking force. Such as poor brake power/brake binding.

Hand Brake:- The hand brake provides a means of attaining retarding force with the brake shoe. The BOXN & BCN wagons are equipped with side operated hand brakes.

Quick Coupler :- All the air brake goods brake vans (BVZC/BVZI) are equipped with a 'quick coupling arrangement' that permits quick coupling of detachable gauge (a part of personal equipment of Guard) for checking the brake pipe continuity & air pressure thus ensuring safety of trains.

POH:- means Periodic Overhaul of Rolling Stock. It signifies a thorough minute examination of rolling stock & is undertaken in nominated work shops, painting of body also to be done during POH. It is done for wagons and coaches. Return date of the vehicle indicates due POH.

Period: Wagon First time after 6 yrs, then after every 4.5yrs.

Coaches: First time after 2 yrs, then after every 18 months. (ICF)

ROH:- ROH means Routine Overhaul carried out on roller bearing fitted wagons at nominated wagon depots like TATA, BNDM, ADTP, BOKARO, BHILAI, VSKP etc,. It is done only for the wagons after every 18 months.

IOH:- Means Intermediate Overhaul. It signifies a thorough minute examination of Coaching Stock in Coaching Depots. Normally one IOH schedule to be in between two successive POHs. It is done only for the coaches. After every 9 months.

CBC: - Means Centre Buffer Coupler. It connects wagon to wagon mechanically. It bears both the draft & buffing force. The yield strength of HT CBC is 180 T. In CBC assembly coupling action is automatic.

Parts of the CBC:-Knuckle, Knuckle Pin, Operating Handle, Lock, Lock lifter, Tounge, Yoke, Draft gear etc.

Short Questions:-

Q. 1. Which brake is based on the simple physical properties of compressed air?

Ans:- Air Brake.

Q.2. Which type brake is used in EMU/ MEMU?

Ans. EP brake.

Q.3. How many wagons are allowed to be replaced by TXR examined wagons in the entire run between two PMEs?

Ans:- **Four (4)**

Q.4. How much leakage is allowed in a goods train as per AFI?

Ans:- **Equal to number of wagons.**

Q.5. One module of BLC wagons comprises how many flats?

Ans: - **Five (5)**

Q.6. In which brake system, parking brake is applied manually through mechanical linkage?

Ans: - **Hand brake**

Q.7. Name the loco brake, which is used as a speed controlling brake on grades or a slowing brake on level track?

Ans:- **Dynamic brake.**

Q.8. What is the maximum limit of flat tyre in ICF (all-coil) coach?

Ans: - **50 mm**

Q.9. While conducting leakage test, what is prescribed leakage rate?

Ans:- **Goods trains - $0.25 \text{ kg/cm}^2/\text{min}$**

Coaching train – $0.20 \text{ kg/cm}^2/\text{min}$

Q.10. Which device is fitted on BLC wagons to function in lieu of EL Box?

Ans: - **Load Sensing Device.**

Q.11. What should be max BP drop when alarm chain pulled from a coach?

Ans:- **0.4 Kg/ cm^2**

Q.12. What is the max speed of NMG rake?

Ans: - **75 Kmph**

Q.13. What is the operational speed of BLC wagons rake?

Ans: - **100 Kmph**

Q.14.What is the size of PEAV choke?

Ans. **8 mm**

Q.15.Which type of roller bearing is used on N/BOX wagons?

Ans: - **CTRB**

Q.16. Why is vac/air brake called automatic?

Ans: - **Because vac/air brakes is self-acting in case of train parting.**

Q.17.Which brake derives its braking force from the atmospheric pressure?

Ans: - **Vac brake**

Q.18.Which pressure works as a reference pressure for actuating the DV?

Ans. **Control reservoir (CR)**

Q.19.What is the size of cylinder in conventional air brake system?

Ans: - **14” (355mm)**

Q.20.What is the size of cylinder in Bogie Mounted air brake system?

Ans:- **8**

Q.21.Which equipment distributes air pressure uniformly throughout the train?

Ans:- **DV**

Q.22.Which equipment should be set in closed condition for coupling / uncoupling of air hoses?

Ans: - **Angle-Cock**

Q.23.Which equipment is provided at the junction of brake pipe and branch pipe to protect DV from dust and moisture?

Ans: - **Dirt Collector**

Q.24.Which air brake equipment works as a dummy for the front engine & the rear wagon?

Ans: - **Angle-Cock**

Q.25.What does the red needle of air flow indicator point out?

Ans: - **Reference mark which shows initial train leakage.**

Q.26.Which device is provided to fix pressure gauge in BVZC type brake van?

Ans: - **Quick Coupler**

Q.27.What is the BPC validity of a premium rake in empty condition?

Ans:- **12 days**

Q.28.What is the BPC validity of A-category CC-rake?

Ans:- 7500 Kms or 30 days, which ever is earlier.

Q.29 In a HT CBC, what is the yield strength of knuckle?

Ans: - **180 tonnes**

Q.30.What is the yield strength of enhanced capacity screw coupling?

Ans: - **60 tonnes**

Q.31.When is TC coupling used?

Ans: - To connect CBC & Screw Coupling

Q.32.What is WSP?

Ans: - Wheel Slide Protection.

Q.33.What is full form of PEASD?

Ans: - Passenger Emergency Alarm Signal Device.

Q.34.What is the expanded name of PEAV?

Ans: - Passenger Emergency Alarm Valve.

Q. 35. During testing what is the permissible leakage in BP & FP?

Ans: - 0.2 Kg/cm²/min.

Fill in the blanks.

1. In engine, Brake Valve is set at specified operating pressure of _____ kg/cm² (5/6/10) Ans: - **5**.
2. In engine, Feed Valve is set at specified operating pressure of _____ kg/cm² (5/6/10) Ans: - **6**.
3. Leakage in _____ results in non-application of brakes shortly after brake application. (BP/FP/CR) Ans: - **CR**
4. Which is not an essential requirement of air brake system? (Automatic /Continuous/ Manual) Ans: - **Manual**
5. _____ pressure is depleted only at the time of manual release. (BP/CR/AR) Ans: - **CR**
6. _____ is mounted at the bottom cover of DV. (QRS/ CPB / CR) Ans: - **QRS**
7. DV is connected to _____ through 3-way dirt collector. (BP / AR / BC) Ans: - **BP**
8. In a goods stock, capacity of auxiliary reservoir is _____ litres. (100 / 200 / 250) Ans: - **100**

9. Charging of auxiliary reservoir is discontinued during _____ stage in single pipe system.

(1. Charging 2. Application 3. Release /Recharging) **Ans:- Application**

10. To initiate brake application mathematically $BP < \underline{\hspace{2cm}}$.

(CR / AR / BC) **Ans: - CR**

11. DV actuates when BP pressure drops below _____ kg/cm².

(0.3 / 0.4 / 0.5) **Ans: - 0.4**

12. BPC colour of CC rake is _____.

(Yellow / Green / Pink) **Ans: - Yellow**

13. The concept of _____ rake is originally devised in a cyclic movement on a short circuit.

(End-to-End / Premium / CC) **Ans: - CC**

14. In a CC-rake if km earned is not logged properly, the BPC will remain valid only for _____ days from the date of issue.

(40 / 30 / 20) **Ans: - 20**

15. Up to _____ wagons (equivalent to 10 FWUs) may be replaced by TXR examined wagons in between two successive PMEs.

Ans: - 4.

16. The BPC shall be invalid if a train is stabled for more than _____ hours at non- TXR station.

Ans:- 96 hrs

18. The BPC shall be invalid if a train is stabled at a TXR station for more than _____ hrs. **Ans:- 24 hrs.**

19. GDR check is conducted in case of _____

(Valid BPC/ Invalid BPC / Both) **Ans:- Both**

20. _____ leakage causes false braking.

(BP / CR / BC) **Ans:- BP**

21. PEASD equipments are connected to passenger emergency valve (PEAV) by a common pipe of _____ mm bore. **Ans 10mm**

22. During ACP brake pipe pressure is vented to atmosphere through a _____ mm dia chock **Ans:- 4 mm.**

23. Maximum allowed to leakage is _____ kg/cm²/min in air brake goods train. (2.0/2.5/3.0) **Ans:- 2.5**

24. Maximum allowed to leakage is _____ kg/cm²/min in air brake coaching train. (2.0/2.5/3.0) **Ans:- 2.0**

25. In a coaching train, not more than _____ % of the inoperative cylinders (subject to a maximum of two cylinders only) can be permitted at any intermediate station?

(5/10/15) **Ans: 10 %**

26. On the run not more than _____ cylinders on the whole air brake coaching train shall be dummied.

(1/2/3) **Ans: 2.**

27. The difference between the pressure in the engine & the rear SLR should not exceed _____ kg/cm².

(0.1/0.2/0.3) **Ans: 0.2.**

28. After brake application, distributor valve (DV) is disconnected from the _____.
(BP/AR/BC) Ans: **BP**.

29. _____ pressure is vented out if the brake is manually released by QRV ?

(BP/AR/CR) Ans: **CR**.

True/False

1. The JPO doesn't in any way amend any stipulations of IRCA, G & SR.

Ans: True.

2. CC rakes generally run in a specified circuit and the same is printed in the BPC.

Ans: True.

3. CC rakes are predominantly formed out of off – ROH and off – POH wagons.

Ans: True.

4. CC rakes may be examined at any place within the validity of earlier examination.

Ans: False.

5. If an over due PME/CC rakes is moving towards its base depot, no revalidation of BPC is required even after the expiry of BPC.

Ans: True.

6. All trains originating from or passing through nodal points must have valid BPC.

Ans: True.

7. Divisions are permitted to extend validity of cc rakes beyond specified limits.

Ans: False.

8. ROH & POH wagons are marked and detached from cc-rakes at base depots only.

Ans: True.

9. Breaking the rake into parts and reforming the same parts, will not be deemed to have broken the rake composition.

Ans: True.

10. BPC colour of cc-air braked train is Green.

Ans: False.

11. E/L box adjusts the leverage ratio for loaded & for empty wagons.

Ans: True.

12. On either end of Brake Pipe angle cocks are provided to facilitate closing & opening.

Ans: True

13. Palm ends are used on the coupling side of Air Hoses.

Ans: True

14. Brake cylinder is connected to Auxiliary Reservoir & Exhaust through Distributor Valve.

Ans: True

15. The air brake system works at a BP pressure of 5kg/cm².

Ans. True.

16. Air brake application is caused by the inward movement of piston.

Ans. False

17. Release of brake rigging is not done by the release spring provided in air brake cylinder.

Ans. False

18. Air brake cylinder is suspended in vertical plane.

Ans. False

19. Brake Pipe is of 32mm size in N-BOX wagon.

Ans. True

20. Air brake is worked by exhaustion of air.

Ans. False

21. In Air brake system during brake application air goes into the System.

Ans. False

22. Air brake derives its braking force from the atmospheric pressure.

Ans. False

23. There are provisions for isolation of vacuum brake wagons.

Ans. False

24. Brake cylinder is incorporated with release spring to release the brakes on release/recharging.

Ans. True

25. The length of BOXNHL is more than 250mm over other BOXN type wagons.

Ans. True

26. During ACP air is exhausted from PEASD only.

Ans. False.

FLAT TYRE :

Due to brake binding after skidding of the wheel with the track, wheel becomes flat at some places, It is called Flat tyre.

Permissible limit of flat tyre:

Wagons: 60 mm

Coach & Loco: 50 mm

Demerits: i) Abnormal sound from the wheel

ii) It damages the track

iii) Parts of the vehicle may uncouple or thrown

iv) It may derail

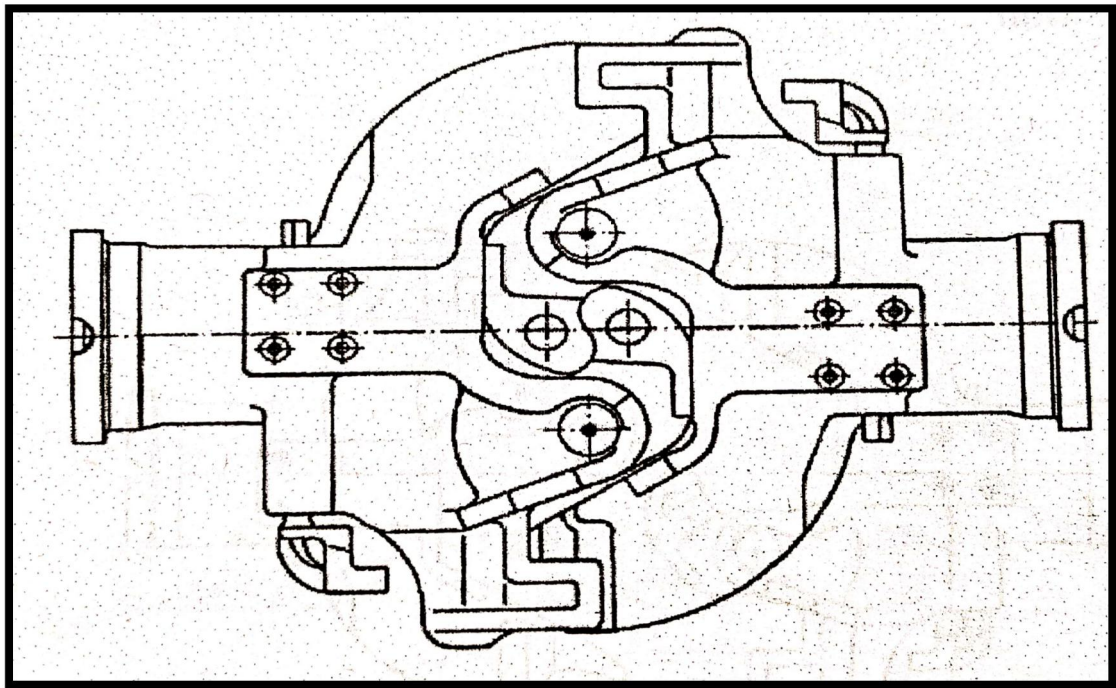
v) Punctuality loss

➤ **LHB Coach**

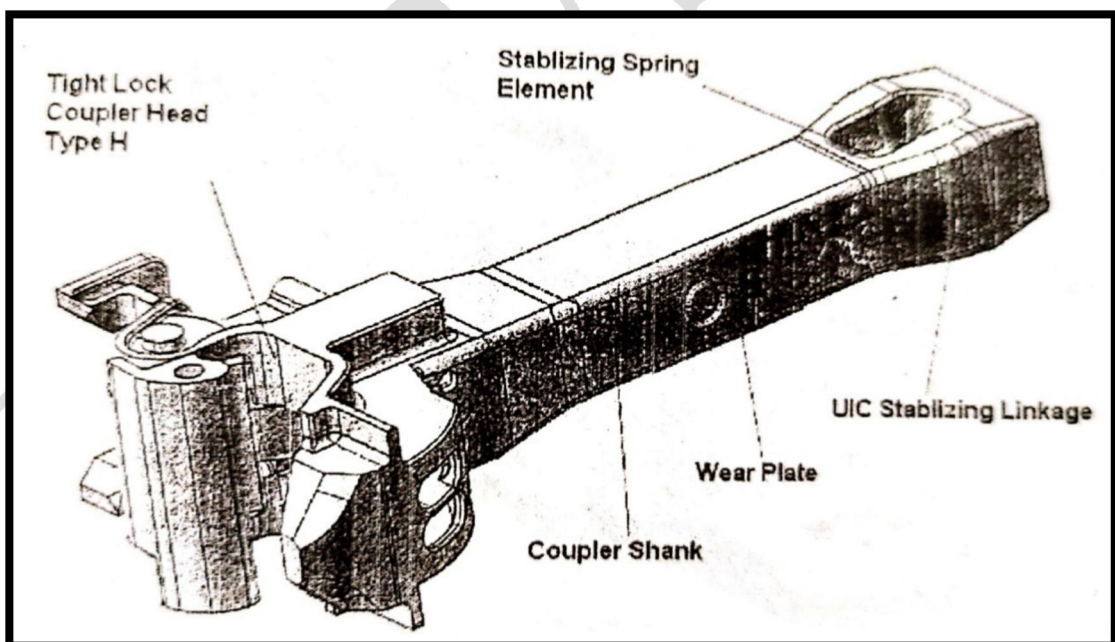
To bring a quantum jump in passenger coach technology and to bring it to contemporary world standards. In October 1995 Indian Railways entered in to a contract with M/s Linke Holfmann Busch (LHB). The bogies for these coaches are being manufactured by M/s FIAT- SIG,Switzerland.

Features :-

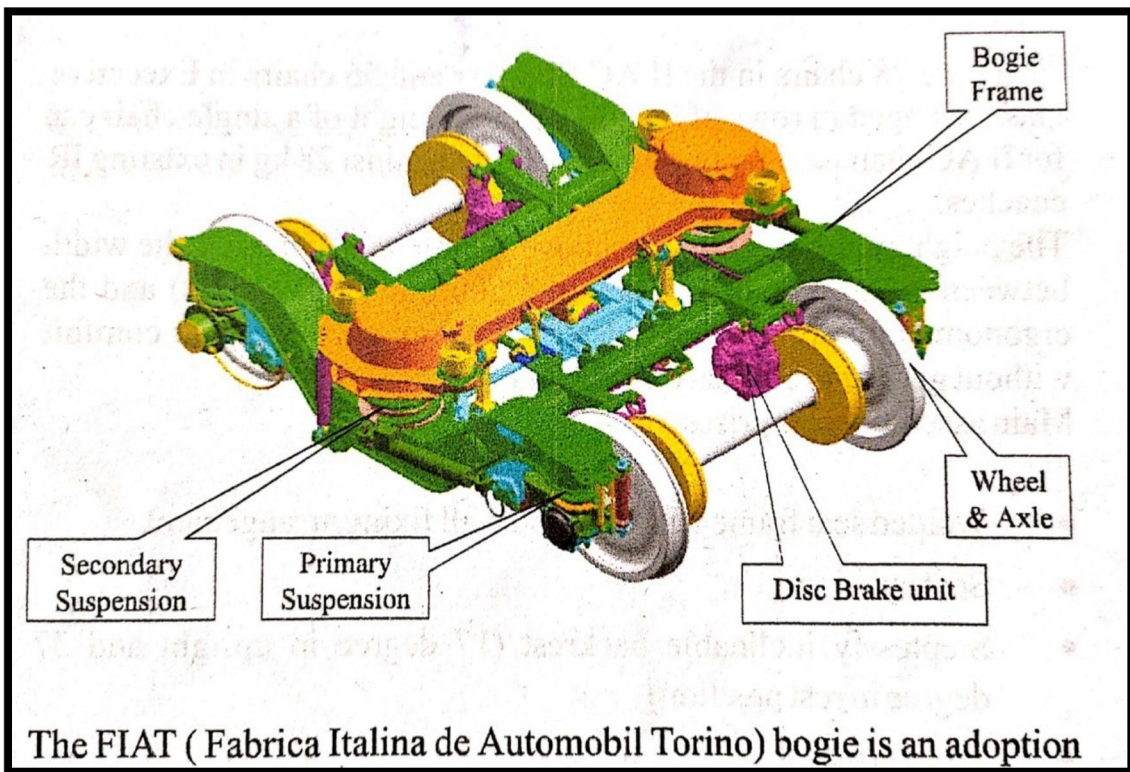
1. Length over body : 23540 mm
2. Length over buffer : 24000 mm
3. Height over roof : 4039 mm
4. Maximum width over body : 3240 mm
5. Height of compartment floor from
Rail level under tare condition : 1303 mm
6. Maximum buffer drop under gross load : 75 mm
7. Higher speed potential - 180 kmph upgradable upto 200
8. Ride index of coach - 2.5 at 160 kmph
9. ACP can be reset from inside of the coach only
10. Body is made of fire retardant material
11. There is a provision of heat and sound insulation
12. "H" type CBC is fitted
13. Axle mounted disc brake - disc dia - 640 mm
14. Seat capacity - two rows extra than ICF coach
15. Breaking distance - 1200m at 60 kmph.



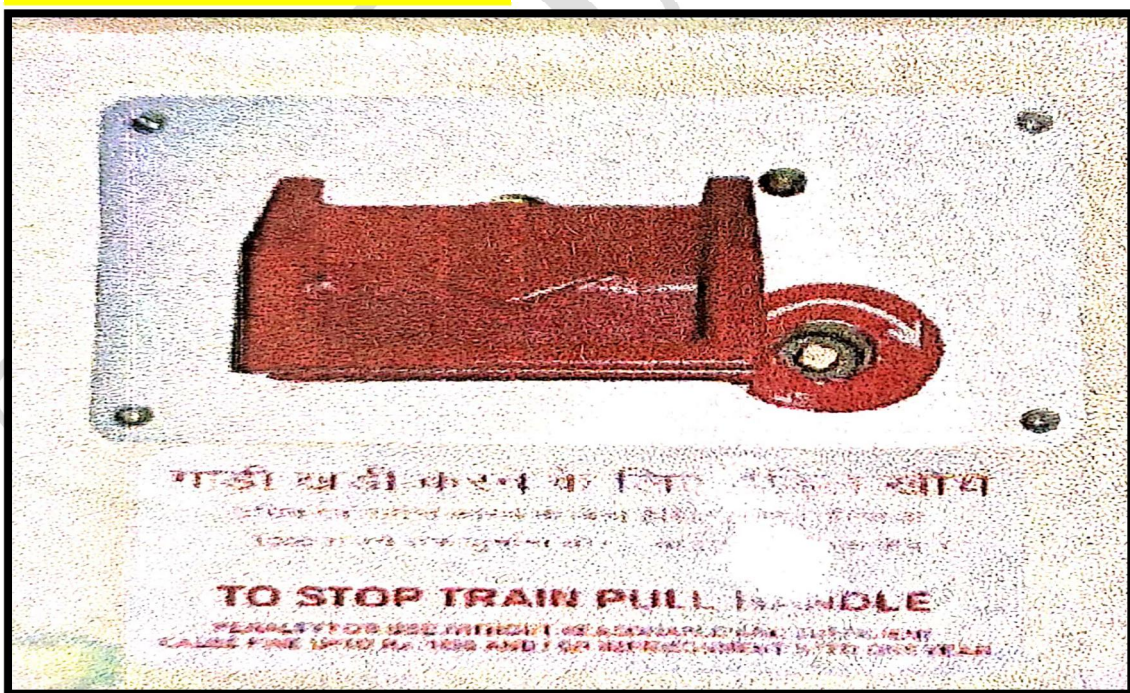
**H TYPE CBC
(LHB)**



CBC YOKE



BOGIE FIAT



ACP SYSTEM

Disaster Risks in India:

India is vulnerable, in varying degrees, to a large number of natural as well as man-made disasters. 58.6% of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12% of land) is prone to floods and river erosion; of the 7516 km long coastline, close to 5700 km is prone to cyclones and tsunamis; 68% of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches. Vulnerability to disasters/emergencies of Chemical, Biological, Radiological and Nuclear (CBRN) origin also exists. Heightened vulnerabilities to disaster risks can be related to expanding population, urbanization and industrialization, development within high-risk zones, environmental degradation and climate change. It can also be related to increase in terrorism around the Globe.

DISASTER MANAGEMENT ACT – 2005

The Disaster Management Act, 2005, enacted by the Parliament provides for the legal and institutional framework for the effective management of disasters. The Act mandates creation of new institutions and assignment of specific roles for Central, State and Local Governments. Under the provisions of the Act, the National Disaster Management Authority (NDMA) has been established under the chairmanship of the Prime Minister and a National Executive Committee (NEC) of Secretaries has been created to assist the NDMA in the performance of its functions. At the State level, a State Disaster Management Authority has been created under the chairmanship of Chief Minister, which has been assisted by a State Executive Committee. At the District level, District Disaster Management Authorities have been created. The responsibility of laying down the policies on disaster management, approving the National Policy on Disaster Management (NPDM) and laying down the guidelines on Disaster Management has been given to NDMA under the Act.

The NPDM envisages a holistic approach to disaster management, encompassing the entire disaster management cycle including prevention, mitigation, preparedness, relief, response, rehabilitation and reconstruction. It addresses all aspects of disaster management covering institutional, legal and financial arrangements, capacity building, knowledge management, research and development. It focuses on the areas where action is needed and the institutional mechanism through which such action can be channelized.

1.1 Salient Features of the Disaster Management Act, 2005:

It is the central legislation on Disaster Management around which all the Disaster Management related activities revolve since its enactment. It legislates a holistic approach to Disaster Management, from mere responding to disasters to greater attention to prevention and mitigation, capacity building and preparedness.

The Disaster Management Plan of the Railways has been prepared by taking relevant provision of this Act into consideration.

Disaster has been defined in this Act as under:

“Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area”

Disaster Management has been explained in this Act as under:

“Disaster Management means a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for prevention of danger or threat of any disaster;

- Mitigation or reduction of risk of any disaster or its severity or consequences;
- Capacity-building;
- Preparedness to deal with any disaster;
- prompt response to any threatening disaster situation or disaster;
- assessing the severity or magnitude of effects of any disaster;
- Evacuation, rescue and relief;
- rehabilitation and reconstruction”

1.2 Important Provisions in the DM Act, 2005 Concerning Railways:

Sections 35, 36 & 37 of the DM Act, 2005 detail the responsibilities of Ministries and Departments of Central Govt. as per which a number of measures/actions are to be taken either on their own or in consultation with NDMA. Drawing up mitigation, preparedness and response plans, capacity building, data collection and identification and training of personnel in relation to Disaster Management is one of the key responsibilities.

NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

1.1 The Disaster Management Act, 2005, provides the powers, roles and jurisdiction of a National Authority as under:-

1.2 Powers and functions of National Authority:

Subject to the provisions of this Act, the National Authority shall have the responsibility for laying down the policies plans and guidelines for disaster management for ensuring timely and effective response to disaster.

The National Authority may --

- a) lay down policies on disaster management;
- b) approve the National Plan;
- c) approve plans prepared by the Ministries or Departments of Government of India in accordance with the National Plan;
- d) lay down guidelines for the State Authorities to draw up the State Plan;
- e) lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;
- f) coordinate the enforcement and implementation of the policy and plan for disaster management;
- g) recommend provision of funds for the purpose of mitigation;
- h) provide such support to other countries affected by major disasters as may be determined by the Central Government;
- i) take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation or disaster as it may consider necessary;
- j) lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management;

NATIONAL DISASTER RESPONSE FORCE (NDRF):

As per Disaster Management Act 2005, various Ministries and Departments under the

Government of India should join hands for mutual assistance in case of a disaster. Assistance from local Government and non-government agencies is invariably required by the Railway Administration for prompt relief and rescue operation in case of major disasters affecting Railways. Assistance of NDRF could be of great help to the Railways in major railway disasters.

Zonal Railways should get in touch with NDRF officers at the nearby NDRF locations to have the first hand knowledge of the resources available with them and also familiarise

NDRF task force with railway related disaster situations and expose them to the issues relevant to rescue and relief of passengers during railway accidents. Railways may also associate NDRF in the full-scale DM Exercise which shall be held once every year. Respective NDRF Battalion pertaining to the Railway territory has to be co-ordinated while doing such exercises.

There are no charges for availing the services of NDRF except for the rail transportation which railways may provide at their cost for attending to rail accidents. Railways may also have to provide the rail transportation logistics for transporting NDRF in case of

non-railway exigencies Railway Board have also empowered Divisional Railway Managers to directly requisition the relevant NDRF Battalion for relief and rescue operations depending upon the gravity of situation so that their services could be made available expeditiously at the time of major Railway disasters without any loss of time. However, requisitioning of NDRF should be judicious and NDM Control Room under Ministry of Home Affairs (Tele No.011-23092885 Fax No.011-23093750) and Security Control Room (Tele No.011-23387981 Fax No.011-23303983) and safety cell (Tele Fax No.011-23382638) in the office of Railway Board must be kept informed. This instruction is issued by Railway Board in consultation with National Disaster Management Authority (NDMA) having the administrative control on NDRF. NDMA CONTROL ROOM (Ref: Rly. Bd's letter No.2003/Safety (DM)/6/3 dt.13.06.08)

CONCEPT OF DISASTER ON RAILWAYS

Disaster defined in Railways' context:

The concept of a Disaster was, till the year 2005, not adequately and comprehensively defined on Indian Railways. It was accepted that a Disaster situation implies, on the railways, to cover only cases of serious rail/train accidents. It was, perhaps, due to this anomaly as late as the year 2008, even CAG's report on DM on Indian Railways has broadly adopted this fact in the concept of disaster and has gone to examine the relief/rescue/mitigation and preparedness of Indian Railways based on the earlier concepts and has reviewed the facilities for handling disasters available with the Railways only on the report/recommendations of the HLC on DM of Mr. S. Dhasarathy. The definition of DM as given by the Government of India was legislated for the first time in the Disaster Management Act, 2005. The broad principles of disaster for any department of the government changed to the concept of any incident which could not be handled with alone by that department i.e. if it was beyond the coping capacity of a particular department, the incident could be termed as a disaster. With this came the concept of the departments of Government of India as also the State governments required to join hands to extend whatever facilities were available with them to provide relief/rescue and mitigation on the occurrence of a disaster. In the DM plan of Indian Railways, this concept of disaster, which has now evolved, has been adopted. The zonal railways have to ensure that, down the line, this definition is understood. While this Disaster Management Plan is a comprehensive Document, more detailed guidelines where required will be laid down on specific topics under the overall philosophy of Disaster Management laid down in this document. For instance, this has been done in the Guidelines on Chemical Disasters and the Hospital Disaster Management Plan.

Definition of a Disaster on Railways:

Based on the definition of the Disaster Management Act 2005, Ministry of Railways has adopted the following definition of Railway Disaster:

“Railway Disaster is a serious train accident or an untoward event of grave nature, either on railway premises or arising out of railway activity, due to natural or man-made causes, that may lead to loss of many lives and/or grievous injuries to a large number of people, and/or severe disruption of traffic etc, necessitating large scale help from other Government/Non-government and Private Organizations.”

NEED FOR DISASTER MANAGEMENT PLAN:

Indian Railways do have an established system of disaster response. Swiftness in an accident primarily depends upon various components constituting the accident relief team being fully conversant with their areas of responsibility. Success or failure of rescue operations in the event of major disaster depends upon the adequate resources both in terms of men and material and extensive teamwork and co-ordinated efforts. In this regard, Railways have set up a High-level Committee to review Disaster Management on Indian Railways. Based on the recommendations of the Committee, it has been felt necessary to have well documented DM Plan and upgrade our resources to improve the capability to handle disasters and mitigate the hardships and sufferings of passengers.

Nodal department for Policy Formulation on DM on Indian Railways:

The preparation of the Disaster Management Plans on Indian Railways and on the Zonal Railways in co-ordination with the different Departments of the Railway, other Central/State Govt. agencies, NGOs, Private agencies, etc. has to be done by the Safety department in the Railway Board, on the Zonal Railways and Divisions. The Hospital DM plans and the Security arrangements (drills etc) shall be prepared and coordinated by the Medical and the Security dept. respectively. The Management of Floods, Cyclones, Earthquakes, Landslides, etc, and preventive action to be taken for mitigation shall be coordinated by the Civil Engg Deptt. The Rescue and Restoration DM Plans including preparing plans and procurement of specialized equipment and rescue centric training of personnel has to be coordinated by the Mechanical Department.

AUTHORITY TO DECLARE A DISASTER ON RAILWAYS :

(RLY BOARD'S LR.NO.2003/SAFETY/(DM)/6/2 PT. DATED 06.01.2009):

Railway Board has authorized GMs, AGMs or CSOs (when GM/AGM is not available) for declaring an untoward incident as Railway Disaster. With the adoption of the above definition of railway disaster, it needs to be appreciated that, a serious train accident may turn into a railway disaster, if not handled and managed properly and there may be many more Railway related events which may not even involve human lives but may turn into disasters for which necessary prevention and mitigation measures are to be taken by the Railways beforehand. Zonal Railways will ensure that prevention, mitigation, preparedness, rescue and relief related issues covering all types of disasters, particularly affecting railway system are addressed and their details are appropriately incorporated in their Disaster Management Plans.

The high level committee on Disaster Management analysed various aspects of the present Disaster Management system and has pointed out areas of deficiencies such as lack of precision, speed and co-ordination, non-availability of clear procedure to avail outside resources and non-availability of an updated databank on outside agencies resources etc. Some important measures suggested by High-Level Committee on Disaster Management are as under: Till date Relief, Rescue and Restoration are primary objectives of DM Plan. By the

introduction of DM Act 2005, the following areas are brought under the purview:

1. Prevention, Preparedness & Capacity Building
2. Preparation of databank
3. Streamlining the Logistics of Railways
4. Seeking assistance from State Government and involvement of Local Civilian Authorities
5. Effective Trauma Care
6. Proper Trigger Mechanism to ensure adequate medical care within "Golden Hour"
7. Divisional/Zonal Disaster Management Plans
8. Making use of Non-Railway Resources
9. Maintenance of ART/MRT to have failure proof service
10. Defining responsibilities of various staff / departments

In addition, DM Plan should also be a golden opportunity for developmental process, in

which, quality and standard of construction process shall be based upon standard Civil

Engineering procedures. With a view to buildup appropriate capability to manage Disaster at Divisional & Zonal levels, clear instructions, defining the role of various Departments are required. This DM Plan issued by this Railway covers such instructions to organize an efficient Rescue, Relief & Restoration operation and lay down the basic framework for immediate action by every Railway Servant.

Philosophy of Disaster Management in the Railways

With the enactment of the Disaster Management Act, 2005 and other developments on the national level, DM philosophy has also changed to adopt the latest concepts.

NEW PHILOSOPHY

- Serious train accidents, not the only events termed as disasters.
- Other events, e.g. Internal security related events like terrorist attack at station/train, marooning of train due to flash flood, disruption to traffic due to natural factors like earth-quake, cyclone, floods etc.
- No more Relief and Rescue Centric.
- Holistic Approach adopted to incorporate :-
 - Prevention
 - Mitigation
 - Preparedness
 - Rescue, Relief
 - Rehabilitation

New Philosophy gives more Emphasis on Prevention and Mitigation as under:

- Prevent and mitigate disasters
- Audit Existing Systems for Disaster Resistance, Disaster Prevention and Mitigation on the basis of NDMA's and self prepared guidelines
- Disaster Management in Developmental Planning – New activities should be disaster resistant
- Preparedness, Rescue, Relief and Rehabilitation - Dimensions of DM
- Expertise based response from all stake holders
- Pooling of resources of all agencies, e.g. local administration, community, defence, hospitals and other Govt. organizations.

Disaster in the Railway context was traditionally a serious train accident, caused by human/equipment failure, which may affect normal movement of train services with loss of human life or property or both. This is now extended to include natural and other man made disasters.

DISASTERS IN RAILWAYS ARE MAJORLY CAUSED AS A RESULT OF:

- i. Human failure / equipment failure.
- ii. Sabotage.
- iii. Natural calamities.

Disasters in Railways result in heavy loss of lives, injuries, damage to property and affect

the normal movement of trains.

i. Human / Equipment failure leads to:

- a. Collisions.
- b. Derailments.
- c. Level crossing accidents at Manned/Unmanned Level Crossings.
- d. Fire on Train.

ii. Sabotage involving disaster is on account of:

- a. Bomb blasts.
- b. Setting fire to train/Railway installations and Railway property.
- c. Tampering with Railway fittings to cause accidents.
- d. Placing of obstructions on track to cause disruption to traffic.

iii. Disasters owing to natural calamities are:

- a. Earth quakes.
- b. Land slides.
- c. Cyclones/Floods.
- d. Storm/Tornadoes.

TYPES OF DISASTERS CAUSING INTERRUPTION TO TRAIN SERVICES:

A) HUMAN/EQUIPMENT FAILURE:

The disasters/accidents may be caused by human/equipment failures, which may affect

normal movement of train services with loss of human life or property or both. These include:

- _ Collisions
- _ Derailments
- _ Accidents at manned or unmanned level crossings.
- _ Fire or explosion in trains
- _ Other accidents affecting the safety of rail operation.

B) NATURAL DISASTERS:

Natural disaster in general like floods, cyclones is forecasted; whereas others like earthquakes, landslides etc. are difficult in nature to forecast. But preparedness for floods & cyclone will help in tackling situation for other natural disasters also.

1. Landslide:

_ Whenever landslide is expected / experienced due to heavy downpour, all train services to be regulated. Rescue team to be rushed for restoration work.

2. Floods:

Based on the weather forecast warnings regarding impending flood condition, the following steps should be taken: Watchman at important bridges and at vulnerable points to inform flow of water to be posted.

- _ Shifting of all movable equipment around the bank.
- _ If time permits, sandbags, dykes can be constructed to ensure safe passage of trains.
- _ Regulate the train service till the flood recedes.
- _ Evacuate people on train / at station and move them to a safer place.
- _ Contact Fire brigade, Naval, Army, Air force, Local boat man and arrange Divers and boats.
- _ With the co-ordination of local authorities, arrange temporary shelter in nearby schools, marriage halls, community centres etc.

- _ If necessary, arrange coaches to accommodate the affected.
- _ Seek assistance from voluntary organisation and arrange safe drinking water, food, medicines, etc.,
- _ RPF and GRP in co-ordination with local Police shall arrange protection.
- _ Keep constant communication with Divisional Control Office.
- _ When people are marooned by floods, arrange air dropping of food packets, clothes etc.,
with the assistance of Civil Administration.
- _ Contact SJAB (St. John Ambulance Brigade), local doctors and provide medical care to the affected.

3. Cyclone / Storm:

When a train is caught in a cyclonic storm at mid section/station:

- _ Stop the train clear of cuttings, bridges and embankments.
- _ Guard, Loco-Pilot and other Railway servants on train shall keep open windows and doors of all coaches.
- _ At stations where Anemometer is installed, shall not start trains when the wind velocity exceeds the permitted level of 65 KMPH. At other stations when the wind velocity exceeds safe limits, SM must consult with Control and GDR of the train before starting.
- _ Make announcement frequently to warn the public about the storm/cyclone.
- _ Take all necessary action to provide shelter and other assistance as in the case of floods.

(C) MAN MADE DISASTER:

The following disasters / accidents may be caused by human activities, which may affect

the normal movement of train services with loss of life or property or both.

Sabotage causing deliberate loss of life/damage to property or both.

- Bomb threat/ blasts.
- _ Setting fire to Train.
- _ Tampering with Railway fittings to cause accidents.
- _ Placing of obstructions on track to cause disruption to traffic

1. Bomb threat/Blast:

Person receiving call regarding bomb threat:

- _ Should attempt to gain as much information as possible from the caller ID devices, time set, location, reason / purpose of the act, dialect mannerism and identity of the caller.
- _ The person receiving call should inform higher ups who in turn shall alert the Disaster Management team (Bomb detection squad).
- _ Also, alert Police, Fire Brigade and Explosive Department.
- _ Pass the information to all Departments concerned.
- _ Take initiative for evacuation of all from the premises.
- _ Person noticing a bomb like object, should bring it to the notice of the nearest available Officer.
- _ Inform Railway Police, RPF, and Bomb detection squad.
- _ Ensure all persons are away from the spot and to avoid unnecessary crowding near the area.
- _ Inform control to take further steps of regulating the train services.
- _ Wait for clearance from the Police Department to restore normal working.

2. Tampering of Railway fittings causing accidents & Placing of foreign particles on track to cause disruption to traffic

- _ A staunch vigil should be kept by introduction of special patrolling over the area as and when warranted with assistance of RPF personnel.

- _ Specially trained persons shall be drafted for duty over the area if required.
- 3. Radiation Emergency/Personal Injury Involving Radioactive Material Contamination
 - _ Render first aid immediately for serious injuries.
 - _ As far as possible, without causing harm to the victim, monitor the injured and remove contaminated clothing and gross personal contamination.
 - _ Remove and bag all contaminated clothing.
 - _ Call Fire Station, bomb squad, and police.
 - _ Skin contamination should be cleaned using mild soap and warm water. Use portable survey meter to monitor for remaining contamination. If not free of contamination, re-wash and re-survey.
- 4. What to do upon suspected letter/package receipt
 - _ Call Police/Fire Service/ Bomb Squad.
 - _ Handle with care
 - _ Don't shake or bump
 - _ Isolate and look for indicators
 - _ Don't open, smell, or taste
 - _ Treat it as suspect
- If parcel is Open and/or Threat is identified for a Bomb
 - _ Evacuate immediately
 - _ Call Police / Fire Service / Bomb

PREPAREDNESS FOR NATURAL DISASTER FROM DEPARTMENTS:

1. Engineering Department
 - _ Shall identify Risk Zones prone for natural disasters like floods, cyclones or earthquakes with the help of Meteorological Department.
 - _ Shall identify major infrastructures like track, bridges and buildings and such inventory analysed for its strength to withstand such disasters.
 - _ Shall keep sufficient stock of track materials.
 - _ Shall ensure arrangement of essential items like empty bags, sand, dust, cinders etc. ready to be moved to vulnerable locations.
 - _ Intensify Patrolling of track at vulnerable locations.
2. Mechanical Department
 - _ Shall ensure that ARTs, ARMVs are equipped with sufficient tools.
 - _ Staff of proven caliber to be nominated to man ARTs/ARMEs
3. Medical Department
 - _ Shall ensure availability of adequate medicines first and materials, disinfectants etc. at Health Units / Hospitals near the vulnerable places.
 - _ Shall take enough measures to prevent epidemics, in co-ordination with Engineering Department for sanitation and disinfection of drainage and public places.
4. Electrical Department
 - _ Shall ensure availability of standby power (generator) at strategic locations.
 - _ In OHE area, sufficient stock of relief materials shall be kept.
 - _ Tower Wagons with quick mast erection facilities and sufficient spares should be kept ready at Tower Wagon Shed (for electrified section).
5. Telecommunication Department
 - _ Shall ensure proper communication with adequate facilities like Wireless Communication, Satellite phones etc.
6. Transportation Department
 - _ Requirement of essential staff and their deployment shall be assessed by Sr.DOM of respective Divisions.

_ SMs of the warned area stations, in co-ordination with assistance respective Departments, shall ensure all station equipments like Generator, Emergency light VHT sets, First Aid equipment etc. are in good condition.

_ SMs will also ensure proper securing of stabled coaches / wagons as per extant instructions.

_ COM of the Railway will issue instructions regarding regulation, diversion or cancellation of trains in the warned section with information to CPRO.

7. Commercial Department

_ Shall alert arrangements to open enquiry offices at areas likely to be affected.

_ Shall ensure arrangement for food, water and other requirement at vulnerable places.

8. Security Department

_ Alert Security personnel to accompany relief material trains and render assistance at vulnerable stations in handling public enquiries.

_ Arrange for crowd control and also prevention of theft.

9. General

_ Apart from the above, each PHOD/DRM shall nominate an officer to monitor warned location and order arrangement.

_ A monitoring cell shall be formed by all Departments concerned at Divisional and Zonal level to ensure proper co-ordination and planning.

ACTION PLAN FOR DIFFERENT EXIGENCIES:

_ When first tremors are sensed during an Earthquake, all Personnel should evacuate buildings and assemble at safe places away from structures, walls and falling objects.

_ Emergency shutdown should to be declared.

_ Emergency response plan to be activated.

_ After the status is restored, personnel should inspect all the facilities for rescue, assessment of damage, cleanup, restoration and recovery Squad.

GOLDEN HOUR CONCEPT:

"If a critical trauma patient is not given definite medical care within one hour from the time of accident, chances of his ultimate recovery reduce drastically, even with the best of medical attention thereafter. This initial one hour period is generally known as The Golden Hour"

- Render definite medical care within Golden Hour.

- Stop bleeding and restore blood pressure within an hour.

- Persons under shock shall immediately be relieved of shock.

- Transport the casualties to the nearest hospital.

DISASTER RESPONSE:

INSTANT ACTION TEAM – Loco-Pilot / Assistant Loco-Pilot, Guard & other on-board staff – their duties.

Duties of LP & ALP:

- Ensure loco flasher light is switched 'on'.

- Note down the time, location and weather condition.

- Ensure the formation is secured, protect the train giving priority for protection on adjacent line/s on double and multiple line sections.

- Inform the Guard, nearest SM and SCR/TPC by using walkie-talkie set/CUG/emergency telephone socket, etc., i.e., in other words make efforts for quickest possible means of communication for transmitting the information.

- Render first-aid and assist Guard in saving the lives.

- Ensure the speedometer memory freeze button is operated duly breaking the glass cover.

- Ensure the important documents such as BPC, VG, caution order and other train passing documents given en-route by the station Operating staff are handed over to the Inspector / Officer who arrives first at the accident site.
- Ensure the important documents / registers are seized from Gate lodge, in case of accidents involving road-users.
- In case of fire related accidents, make use of the fire extinguishers loaded in the locomotives.
- Ensure the clues are not disturbed.
- Do not allow the unaffected wagons / coaches from the site of accident unless they are permitted so by the ART Supervisor or by the C&W official or by conducting GDR check.

Duties of Guard:

- Ensure the LV board / flashing tail lamp is available / properly working during day / night and foggy weather respectively.
- Note down the time, location and weather condition.
- Ensure the formation is in secured position.
- Protect the train in rear and ensure the adjacent line is protected first on double and multiple line section by loco crew.
- Inform the SM and SCR by the quickest possible means such as walkie talkie set, CUG mobile phone, using the portable control telephone (in case of coaching trains), through nearby LC Gate telephone or IB Signal post telephone, stop the adjacent line trains and convey the information of accident or detach the loco (if, in good condition) and send it to the nearest station, etc.,
- Make a quick survey of the accident site and ask for relief accordingly.
- Render first-aid to the injured passengers and assist / co-ordinate with loco crew in saving the lives, transport the injured to the nearest hospitals/nursing homes/clinics.
- In case of fire related accidents, make use of the fire extinguishers available in the Guard compartment of SLR/LRs.
- Ensure all the clues are preserved.
- Ensure the important documents / registers are seized from Gate lodge, in case of accidents involving road-users.
- Do not allow the unaffected wagons/coaches from the site of accident unless they are permitted so by the ART Supervisor or by the C&W official or by conducting GDR check.

Duties of TTE and Pantry Car staff:

- Avail the services of the doctors and other paramedical staff travelling by the train in rendering first-aid to the injured and in transporting the injured to the nearby hospitals/ clinics / nursing homes.
- Render first-aid to the injured passengers.
- Prepare a list with the details of the injured passengers such as name, age, sex, ticket no., along with coach no./ berth no. and contact telephone no., etc.,
- Assist in transporting the injured to the nearby locations where medical facilities are available.
- Co-ordinate with local volunteers and other Railway officials at the site of accident.
- In case of fire related accidents, make use of the fire extinguisher units kept in the AC

Coaches, Pantry Cars and at stations.

- Inform the stranded passengers about the cancellation, regulation and diversion of trains as given by Control Organisation.

Duties of AC Mechanics and Coach Attendants:

- Switch 'off' the power supply and avoid short circuiting.
- Assist the LP, Guard, TTE or any other Railway official at the site of accident in saving the lives and in transporting the injured to the nearby hospitals.
- Render first-aid to the injured by using the first-aid boxes available with the in-charge of the Pantry Car and from the Guard.
- Make use of the fire extinguishers kept in the AC coaches in cases of fire related accidents.

Duties of Security staff on escorting duty:

- Render first-aid and help in extricating the entrapped passengers.
- Ensure safety and security of the relatives /dependants of injured passengers and also the security of railway property.
- Protect the clues at the site of accident and collect such P.Way material and Rolling stock parts including that of locomotive which would contributed for the accident.
- Protect the bag and baggage of the train passengers.
- Ensure crowd control by providing plastic tape barricades and give warning messages through hand-held loud speakers.
- Assist Civil Police and GRP.

FIRST RESPONDERS – NEAREST GANG, STATION MASTERS, OTHER DEPARTMENTAL OFFICIALS –DUTIES

Duties of Engineering Gang:

- The Gangmate and his team of Trackmen should rush to the accident site immediately.
- Render all possible help to the injured passengers and co-ordinate with other Railway officials in relief and rescue work.

Duties of Gatemen:

- Keep the LC Gate in closed condition, if the train is stopped within the gate portion.
- Exhibit stop hand signal to trains coming on adjacent lines.
- Inform the SM of the station to which the LC Gate is connected.

Duties of Station Masters/Managers:

- Do not allow any train into the affected block section on the same line and also on adjacent line on double line/multiple line sections.
- Inform the SM of the adjacent block station, SCOR, Medical authorities (both Railway and non-Railway) and other Officials / Officers (like SSE/SE/JE-P.Way, SSE/SE/JE-C&W, SSE/SE/JE-Electrical, SSE/SE/JE-Signal and Telecom Department, Security Officials, GRP, CCC, SLI, AEN / ASTE / AO / AM, etc., stationed at the station.
- Mobilise all kinds of medical resources available at the station, i.e., Railway and non-Railway to go to the accident site and to take care of the injured passengers brought to the Civil Hospitals/Nursing Homes/Clinics, etc.,
- Inform the Civil, Revenue, Police, Transport, NGO Organisations, Political dignitaries, fire fighting officials, etc.,
- Seize the registers and records from the station / cabin.
- In case of accident at station, note down the position of points / signals/ block instrument position, BPAC condition, Relay Room position, data logger condition, etc.,
- Co-ordinate in making catering arrangements in consultation and sanctions from Divisional/Zonal Headquarters.
- Ensure that Public Assistance booth is opened and manned continuously with details of dead, injured, locations where they are undergoing treatment, details of cancellation/termination/diversion of trains. The necessary infrastructure required to man the booth also to be arranged.

- Call the 'off' duty staff to assist at the station.
- Assist the stranded passengers by arranging catering, transport, medical, shelter arrangements, etc.,

Duties of SSE/SE/JE-P.Way of the section:

- Proceed to the spot immediately.
- Seize the documents from the LP such as BPC, Caution Order, train passing documents, etc.,
- Secure and preserve the gang diary, gang chart, curve register, etc.,
- Assess the accident site and call for the assistance accordingly.
- Assist and co-ordinate with other officials in relief and rescue work.
- Preserve all the clues at the site of accident.
- Prepare the accident sketch.
- Execute other functions as ordered by Officers at the accident site.

Duties of Section TI:

- Proceed to the spot immediately.
- Ensure that no other train is sent into the block section except relief trains.
- In case of accident at station, seize all the relevant station records and registers.
- Seize the important documents from the LP such as BPC, Caution Order, train passing documents, etc.,
- Keep close liaison with Control Organisation and assist in receiving the relief trains at the site. In case of accident at station, assist the SM in receiving, despatching, marshalling the relief trains and noting down the position of signals/points/block instrument/BPAC, etc.,
- Execute other functions as ordered by Officers at the accident site.

DM TEAM – DUTIES AT ACCIDENT SITE

Nominated officials from various Departments arriving at site by MRVs and ARTs form part of the DM Team. Officials representing each Department are responsible to ensure that assigned duties of their respective Departments are efficiently carried out. Senior officers of each Department shall also ensure that their work is synchronised with that of functionaries of other Departments for quick rescue, relief and restoration operation. Members of DM Team: Disaster Management team normally comprises members of following Departments.

- a. Trained men from Medical, Commercial, Mechanical, Electrical, Engineering, Security, Operating, Safety and S&T Departments.
- b. In case of fire related accidents, fire service personnel shall also form part of the team.
- c. In case of water-logged accidents, water body, divers and naval cadets will also form part of the team.
- d. In case of suspected sabotage or bomb explosion – bomb disposal squads, forensic lab officials (central and / or state) and GRP/local Police authorities shall also form part of the team.
- e. Various rescue units shall accompany MRVs, ARTs or move by quickest possible means to site of accident.

Officer in-charge of site (OIC site): On arrival of MRV at the site of accident, DRM of the Division shall take over as OIC site from the senior most officer. DRM will be responsible for forming core groups as required and direct them to carry out efficient rescue, relief and restoration operations.

Rescue, Relief and Restoration operation: DM team on arrival shall undertake the following action;

- A. Crowd control and law & order
- B. Rescue operation

- C. Clearance from State Police for restoration, where required.
- D. Relief operations
- E. Installation of communication network
- F. Video coverage of accident site
- G. Preservation of clues and evidences
- H. Media management
- I. Salvage operation
- J. Restoration operation
- K. Lighting arrangements
- L. Catering facilities, etc.,

Photography and videography: Prior to restoration work, Divisional authorities shall undertake suitable video coverage if the complete restoration work. Still photographs by digital camera shall also be undertaken extensively. The coverage and photographs shall be taken from a vantage point and from different angles apart from close-ups and Birdseye view filming. Such photographs shall clearly indicate;

- a. Severity of the accident
- b. Illustrate the damage to P.Way, rolling stock, signal, OHE and other structures and equipment.
- c. Victims and unidentified bodies should also be extensively photographed for easy identification, payment of ex-gratia, etc.,

General: For efficient Disaster Management, responsibilities of various Departments are to be executed by deputing responsible Officers and Supervisors. Important duties of such Officers and Supervisors are enlisted below:

- a. Ensuring the setting of Unified Command Centre
- b. Collecting the information on progress of restoration from OIC site.
- c. Take stock of the situation and plan for effective and efficient rescue operation.
- d. Estimate the quantum of assistance required from the resources available within the

Division, adjoining Divisions, non-Railway agencies and from State/District authorities.

- e. Ensure general co-ordination from various Departments.
- f. Intimation to District Civil, Revenue, Police authorities.
- g. Given prima-facie cause of the accident and probable time of restoration.
- h. Total no. of dead, injured with complete details.
- i. No. of wagons/coaches involved in the accident, their details and position.
- j. Forecast for completion of each activity such as rerailment, track fitness, OHE fit, points and interlocking, clearance of section and movement of first train.

Q. 157. TRUE or FALSE

- 1. SM of 'A' class station can grant LC when point at reception end is flashing for the Nominated line. **(F)**
- 2. For granting LC at 'B' class station the line must be clear up to starter signal. **(F)**
- 3. Shunting may be permitted in rear of a train at 'A' class S/L station. **(T)**
- 5. After granting L/C at 'B' class S/L station is Two Aspect Signalling the line outside home signal may be obstructed. **(T)**
- 6. OCC key is a shunting authority. **(T)**
- 7. SKB key is a shunting authority. **(T)**
- 8. SH Key is a shunting Authority. **(T)**
- 9. A token of prescribed design is a shunting authority. **(T)**

Q.158 FILL IN THE BLANKS:-

- 1. Form no. of shunting authority is -----
- 2. The time period of shunting is fixed by -----
- 3. The line outside the FSS shall not be obstructed unless-----
- 4. OCC key is the shunting authority on ----- section.

5. ----- of prescribed design is a shunting authority.

Q.159 What are the procedure for arranging blocks and imposing speed restrictions:-

(a) The Divisional Engineer concerned shall send to the Divisional Operations Manager by 15th of every month a forecast of speed restrictions and block likely to be required during the following month.

(b)Speed restrictions:-

i) Speed restrictions shall be classified as permanent, Semi-permanent and temporary. Temporary restrictions are those which are purely short term in nature and are not listed in the Working Time Table.

ii) The Divisional Engineer shall inform the DIVISIONAL OPERATIONS MANAGER as soon as it becomes necessary to impose any speed restriction or to lower the speed limit for an existing restriction. Where the necessity for the same can be foreseen, 7 days' notice shall be given to enable the "Green Notice" being issued .

iii) In case of emergency, temporary speed restrictions may be imposed by a Permanent Way Inspector by issue of a message to the Chief Controller or to the SM concerned, to enable caution orders being issued accordingly. Copies of the message shall be sent to all the concerned officers of Engineering, Operating, S&T, Mechanical and Electric (Traction) Departments, as well as to the Loco/Shed Foreman/Traction Foreman (RS), concerned and the Station Masters on either side and those of the notice stations concerned.

c)Blocking of line:-

i) For urgent and unforeseen works required for safety, the requisite blocks shall be arranged specially on requisition by the Engineering officials concerned, even at short notice.

ii) In the case of other works affecting running lines and involving speed restrictions, blocks shall not be imposed unless all concerned have been notified by a circular issued on Green paper and known as "Green Notice". For all such works the Divisional Engineer or the Divisional Signals & Telecom Engineer, as the case may be, shall give 7 days' notice to the DIVISIONAL OPERATIONS MANAGER to enable him to issue the "Green Notice".

Q.160 What are the General Instructions regarding Blocking of line for Engineering Works?

i) The time for blocking the line shall be such as to cause as little interference as possible to train services.

ii) The period of line shall, in all cases, be deemed to commence immediately after clearance of the concerned block section by the last train nominated to pass the work spot block section by the last train nominated to pass the work spot prior to commencement of the line block, unless any later time than that in specifically stipulated in the line, block order.

Q.161. Objective Questions:

- | | | |
|----|---|---|
| 1. | High Flood Level mark shall be painted in | |
| | a) Red b) White c) Blue | B |
| 2. | Termination Indication Board will be | |
| | a) A square b) Round c) rectangular | A |
| 3. | Caution and Termination Indication Boards will be fixed from the bridge or vulnerable places at | |
| | a) 400 metres b) 600 metres c) 1000metres | B |
| 4. | When the water rises above ballast level, but below rail level in | C |

- causeways, train may be permitted to run by
a) JE(PWay) b) One Gangman c) 2 Gangman
5. To apply for Line Block, the notice shall be given to DRM not less than
a) 48 hrs b) 24 hrs c) 12 hrs B
 6. When two trolleys are working in section the gap between the two must be
a) 100 metres b) 200 metres c) 400 metres A
 7. The speed of a trolley is
a) 20Kmph b) 8Kmph c) 15Kmph C
 8. When a trolley is working on T/1518 during thick or foggy weather, the speed is
a) 5Kmph b) 8Kmph c) 10Kmph A
 9. The speed of cycle/moped trolley is
a) 15Kmph b) 10Kmph c) 20Kmph B
 10. The speed of lorry shall not exceed
a) 15Kmph b) 10Kmph c) 20Kmph B
 11. During poor visibility, the speed of lorry is
a) 8Kmph b) 15Kmph c) 5Kmph C
 12. The speed of motor Trolley over points and crossings is
a) 10Kmph b) 8 Kmph c) 15Kmph C
 13. A Lorry shall be protected by banner flags and detonators if it remains stationary within the station yard for more than
a) 15mts b) 10mts c) 20mts A
 14. When unsafe condition of river bund is reported, Caution Order to be issued for speed for day is
a) 10Kmph b) 15Kmph c) 20Kmph B
 15. When water touches danger level mark, C.O. to be issued for speed-
during day
a) 10Kmph b) 15Kmph c) 20Kmph B
 16. Motor Trolley can follow another motor trolley during
a) Day and Night b) Day only c) Day and Night clear weather C
 17. A self propelled vehicle used for repairs in OHE is
a) Tower Wagon b) Ladder Trolley c) Moped Trolley A
 18. Track maintenance machine is permitted to work during
a) day b) Day and Night c) Day clear Weather B
 19. The maximum distance covered by a patrol man should not normally exceed
a) 10KM a day b) 12KM c) 15KM A
 20. The length of long welded rail under Indian conditions should be about
a) 1KM b) 2KM c) 0.50KM A
 21. Goods warning board will be provided from FSS in BG at
a) 1400 mts b) 1000 mts c) 560 mts A

162. OBJECTIVE TYPE QUESTIONS AND ANSWERS SAY (TRUE/FLASE)

1. The Goods warning board will be provided at a section on BG where the speed of passenger train is 100 and goods train is 75 True
2. The distance between goods warning board and FSS is not less than 1200metres False
3. The Goods warning board will be provided at not less than 1400 metres for FSS True
4. When a distant signal is placed at 1000 metres, passenger warning board will not be provided True
5. W/L Board will be provided at all unmanned level crossing gates and at True

	manned_level crossing gates and at manned level crossing gates if they are on sharp curve	
6.	'W' Board will be provided at all level crossing gates	False
7.	'W' Board will be provided at vulnerable places where the Drivers are required to whistle	True
8.	Motor Trolley competency certificate will be renewed to staff stationed in Head Quarters office by CPTM	True
9.	The arrival and departure of patrol man shall be entered in the centre column of TSR by SM	False
10	Danger level mark shall be painted in red colour below the High flood level mark	False
11	Caution indication board will be used for work of long duration	False
12	Termination Indicator will be a square board with a letter T	False
13	If the night patrol man does not turn up within 15mts., run through trains need not stopped out of course for the issue of C.O.	False
14	When the water flows above flat bar level in cause ways, DEN can permit the Driver to pass	False
15	When the water flows below flat bar level but above rail level in causeways JE/P way can permit	True
16	More than one line block on the same date shall not be applied in one applications form	False
17	To carry out line block, portable telephone is a must.	False
18	The line block message may be conveyed not necessarily in telegraph form using code	True
19	If there will be no engineering official at the site of work, caution order need not be given for last train before line Block	True
20	When Line Block order is received it must be copied in TSR in remark column	False
21	The Line Block order must be copied in red ink in bold hand writing across each page of TSR day by day until the actual date	True
22	The Line Block period cannot be extended beyond the time stated in the original Line Block Notice	False
23	On double line, when Line Block is permitted on one line,TSL working on DL may be introduced in the other line	True
24	Normally, during thick or foggy weather, no rail shall be displaced except in cast	True
25	When Engineering work is carried out during thick or foggy weather 2 detonators are to be placed 10 metres apart in rear of caution indicator	True
26	When the work of short duration takes place within station limit the SM and JE/P Way to ensure that the line has been isolated by setting of points by means of clamps and pad lock	True
27	An Engineering work which can be completed in more than a day is called work of short duration	False
28	An Engineering work which can be completed within a day is called work of short duration	True
29	Even is Emergency the Engineering official must start work of short duration only with the consent of SM	False
30	In work of short duration a flag man must be posted with Hand danger signal at 45 metres from the place of actual work	False

31.	If Engineering watch man is not available to present ER7 to pass stop Indicator the train can be piloted by Gangman	False
32.	When work of long duration is to take place within station limit, special instructions shall be issued by DRM	True
33.	Magistrates proceeding to the site of an accident on duty can be carried in Lorry	False
34.	A person requiring medical aid can be carried in Trolley	False
35.	In emergency a Lorry may be loaded in Mail and express trains	False
36.	Trolley can work during night also on form T/1518 in certain areas	True
37.	A Lorry may be worked on T/1518 under caution order production	False
38.	Whenever a trolley is placed or removed in the midsection, signature of the messenger must be obtained on TSR	True
39.	Without obtaining PN from the station in advance, a trolley shall not be permitted on T/1518	False
40.	When a Trolley is cleared at a CNC station, and informed to SM, concerned SMs must exchange PN	True
41.	After entering the block section on T/1518, if thick or foggy weather exists, trolley must be removed from line	True
42.	Gang or Gateman shall show a stop hand signal to warn a Train when they see a Trolley on line	True
43.	During Total interruption of communication, a Lorry must work on T/A602 to open communication	True
44.	During Block failure Motor Trolley following a train is prohibited	False
45.	A Motor Trolley can follow a train during night	False
46.	A Motor Trolley may work on the wrong line in DL in an emergency	True
47.	A Motor Lorry shall not normally work at night	True
48.	On SL, a man shall follow a Trolley and another to precede at not less than 1000 metres in both BG and MG with a danger signal	True
49.	Push Trolley ;shall not be used for establishing communication during total interruption of communication	False
50.	JE/P Way will check the NPM one in a month by train and by night trolley	True
51.	Hot weather patrolling in introduced when the temperature exceeds td +20 degrees 'c'	True
52.	The maximum speed of 4wheeler tower wagon is 40KMPH	True
53.	The maximum speed of 8 wheeler BG Tower wagon is 100KMPH	True
54.	Caution Indication Board is a rectangular yellow board, conic on the side and fish tailed on the other side	False
55.	Temporary Engg. Indicators which are reflective type need not be lit during night	True
56.	Passenger warning board will be lit during night	False
57.	Passenger warning board will not be provided for gate signals	False
58.	At stations where both Inner Distant and Distant signals are provided goods warning boards will be dispensed with	True
59.	W/L Boards will be provided for all level crossing gates	False
60.	Caution Indication Board will be fixed at not less than 600 metres from the bridge or vulnerable places	True

61.	Only Three material Trains can be permitted during line block	False
62.	In Lorry 15 men may be carried on BG	False
63.	Motor Trolley competency certificate is valid for 3years after which it must be revalidated for another 3 years for no gazetted staff	True
64.	In token less area, when a motor trolley is working on line clear ticket on arrival at next station to be handled over to SM	True
65.	Track maintenance machine can work only during day	False
66.	Track maintenance machine competency certificate is valid for 5years	False
67.	Works of short duration is an Engg. work which can be completed within a day be from 6 to 18hrs	False
68.	It water flows above flat bar level in causeway, DEN can permit speed 5 KMPH	False
69.	In jungle and Ghat sections 2 patrol men may be deputed for each beat	True
70.	Normally the beat length shall not exceed 3kms	False
71.	If Torch light is not supplied to patrol man one more HS lamp to be supplied	True
72.	During think or foggy weather a Track machines can be permitted to work with DRM permissions	True
73.	During Total Interruption Track machine can be used for establishing communications	False
74.	Shunting of goods stock shall be permitted on the line where Track machines are stabled	False
1.	When the SM receive a message from local authorities for unsafe condition of river bunds he must issue caution order with speed _____ during day and _____ during night	15 & 10
2.	Total no. of _____ track maintenance machines are permitted into block section during line block	Any number
3.	Track maintenance machine must work as train on _____	Line clear
4.	Track maintenance machine must be protected as for _____	Train
5.	If night patrol man does not turn up within _____ minutes, caution order will be issued.	15
6.	If the night patrol man does not turn up within 15mts, caution order will be issued for speed _____ Kmph during day and _____ Kmph during night	40/15
7.	Caution indication boards will be provided at all _____ places.	Vulnerable
8.	When the water flows above ballast level but below rail level in cause ways train can be allowed to pass after being certified by _____	Gangman

9.	When the water flows above rail level and below Flat bar level in cause ways _____ can permit the train to pass	JE(PWway)
10.	For imposition of Line block application must be sent _____ Hrs in advance	24
11.	In the work of short duration the first flag man to the approaching train must stand at not less than _____ metres from the last detonator	45
12.	For work of long duration, the stop indicator must be erected at not less than _____ metres on BG	30
13.	A lorry must work as _____	Train
14.	A vehicle which can be bodily lifted off the line by _____ is a trolley	4 man
15.	For a trolley to work in notified areas during day the trolley must work on _____	Line clear
16.	When a motor trolley is in charge of officer, the motor trolley can go up to outer most facing points after waiting for _____ minutes	10 mts
17.	The Banner flag is a _____	Temporary stop signal
18.	Anemometers are provided to measure the _____ of wind	Velocity
19.	Patrol Diagrams are issued by _____	DRM
20.	When a trolley is working on T/1518 and not cleared the section at 18hrs, other trains shall be started on _____	T-1408
21.	The Key man of the gang shall walk over his length of line at least once _____ in each direction	Daily
22.	Once a _____ the duties of the Key man shall be performed by the gang mate	Week
23.	In jungle and ghat sections _____ patrol men may be deputed for each beat	Two
24.	Normally the beat length shall not exceed _____ KM.	Five
25.	A period of at least _____ rest is desirable between consecutives beats in night patrolling	½ Hour
26.	The interval between two consecutive patrols shall be normally _____ hrs	3 hrs
27.	The speed of patrol man walk shall not exceed _____ KMPH	3 hrs
28.	When a petrol man is not supplied with a torch light _____ Hand signal lams shall be supplied	Two
29.	When a train is passing, the patrol man shall stand on the _____ side to passing train	Right
30.	If the patrol man does not turn up within _____ minutes, caution order must be issued	15
31.	The flat bars in cause ways will be painted alternatively _____	Black & White
32.	All Engineering Indicators shall be placed on the _____ side of the line as seen by the drivers	Left hand
33.	_____ Marker Board need not be provided when speed over _____	S

	points at outlying siding is less than 50 KMPH	
34.	Caution orders need not be issued for _____ speed restrictions	Permanent
35.	To indicated to Drivers of Goods trains to run at a restricted speed and where speed and caution indicators are provided they should bear the legend _____	GDS
36.	To pas the stop indicator the Engineering Watchman to present form _____ to Driver and pilot the train	ER7
37.	When a Driver passes Engineering stop indicator on ER7 he shall proceed at KMPH _____	10
38.	BG trolley can carry _____ men	10
39.	Form _____ will be used for Motor Trolley on double line only	T/A 1525
40.	Trolley competency certificates shall be valid for _____ years	3
41.	Trolley competency certificates is valid for _____ years for Divisional Officers	5
42.	The clearance of the height gauges at, level crossings in electrified section shall be maintained at _____ metres from road level	4.67
43.	Only _____ persons other than the motor man/Guard are authorised to travel in the cab in EMU	2
44.	Authority for starting a motor trolley from a station in a DL is _____	PIC
45.	Caution Indication board will be provided at _____ metres from the bridge or vulnerable places	600
46.	W/L board will be provided at not less than _____ metres from the gate	600
47.	Termination Indication Boards post will be painted alternatively black and white with _____ cm high bands	30

Que. 1: TSR is maintained in a prescribed form no. _____.

Ans: OP/T-28(R)

Que. 2: If bell code is not acknowledged, it shall be repeated at an interval of _____ Second.

Ans: 20 Second.

Que. 3: No bell code signal shall be acknowledged until it is clearly understood.

Ans: True.

Que. 4: A signal shall not be deemed complete until it is acknowledge. (T/F)

Ans: True.

Que. 5: Electrical block instrument shall not be brought into use unless approved by CRS. (T/F)

Ans: True.

Que. 6: Approved means of taking line clear are electrical block instrument of token or token less type, track circuits, axle counters or electrical communication instruments. (T/F)

Ans: True.

Que. 7: Without the permission of SM, no railway servant shall interfere with block working equipment. (T/F)

Ans: True.

Que. 8: Validity of competency certificate is _____ year from the date of issue.

- Ans: 03 Years.
- Que. 9: Competency certificate for operation of block instrument is issued by the Principal, ZRTI/SINI.
- Ans: Principal, ZRTI/SINI.
- Que.10: Validity of OP/T-1B may be extended for max. ____months by ____.
- Ans: 06 Months & AOM.
- Que.11: All entries are made in the TSR in blue/black ink. (T/F)
- Ans: False.
- Que.12: What are the various means of granting/obtaining line clear?
- Ans: Electrical block instruments of token or token less type.
Track circuits, Axle counters & Electrical communication instruments.
- Que. 13: Electrical block instrument shall not be brought into use unless they have been passed by the ____.
- Ans : Commissioner of Railway Safety (CRS).
- Que. 14: No Railway servant shall interfere with the block working equipment without the permission of ____.
- Ans: Station Master.
- Que. 15: Competency certificate for block working shall be in the prescribed form no. OP/T-1B.
- Ans: OP/T-1B.
- Que. 16: The Driver shall ensure that the authority to proceed given to him is a proper authority under the system of working. (T/F)
- Ans: True.
- Que. 17: Write down the conditions for closing of block section.
- Que. 18: Train message books after completion shall be retained for 06 months at a station.
- Ans: True.
- Que. 19: Bell code signal for train passed without LVI is ____.
- Ans: 06 Pause 02
- Que. 20: Bell code signal for obstruction danger is ____.
- Ans: 06 beat.
- Que. 21: Bell code signal for stopping and examination of the train(due to Hot axle/Brake binding/Hanging parts etc) is ____.
- Ans: 06 Pause 01.
- Que. 22: 6-4 beat is meant for ____.
- Ans: Vehicles running away in wrong direction on double line Or into the block section on single line.
- Que.23: 6-5 beat is meant for ____.
- Ans: Vehicle running away in right direction on double line.
- Que.24: Call attention beat shall be given in all cases except giving six beats. (T/F)
- Ans: True.

Q.163. Duties of a guard in case of Murder or serious assault?

If a murder or serious assault be committed in a Railway carriage on a running train, the following action shall be taken by the guard-

- ✓ Vacate the compartment and lock up.
- ✓ Closed all shutters immediately from outside, so that all clues like blood stain, finger prints etc may remain undisturbed.

If the crime took place in a second class compartment

a) the carriage shall be detached at the station where the crime was detected.

b) It shall be watched till the Police arrive to take over the case.

If the crime took place in a upper class compartment,

a) It shall be immediately locked up.

- b) Carriage allowed to the nearest station where it can be replaced.
- ✓ If the GRP staff are not available, a number of Rly staff must watch it, until a police officer comes upon the scene.
- ✓ No other person except those who are giving First Aid to the injured passenger or unable to leave the compartment will be allowed to enter the compartment.
- ✓ Railway police shall be advised at what station the carriage has been detached
- ✓ The carriage shall not be removed or utilized without the written permission from the police releasing the carriage.

Q.164. Duties of Staff concerned when person run over or knocked down

by a train.

❖ When Life is not extinct:

- ✓ First aid to be given by Guard and /or by a qualified doctor if any in the train or at the station.
- ✓ Person to be sent to the nearest Railway station.
- ✓ SM will arrange to send the injured to the Hospital, after rendering First aid.
- ✓ A statement should be recorded by the Guard and/or LP.
- ✓ Particulars like name, father's name, age, sex, caste, address, relatives/friends available nearby, reason, particulars of injuries etc.
- ✓ Duplicate statement with signature of Guard, LP or the person found the injured & other witness.
- ✓ Copy to be handed over the SM, for onward transmission to the Police authorities
- ✓ Along with the statement, a memo showing date time and place and action taken thereof, should also be handed over to the SM.

When life is extinct:

- Guard and/or LP or Railway employee concerned must ensure recording of all available evidences.
- The dead body should not be removed until the arrival of Police.
- However, to clear the line, the dead body may be removed with minimum movement.
- Information to the Police authority without loss of time.
- Memo to be prepared with following particulars:
 - ✓ Time and place.
 - ✓ Position of the body.
 - ✓ Blood stains on the ballast, rail, sleeper etc.
 - ✓ Extent of injury.
 - ✓ Whether injury inflicted by a train or otherwise.
 - ✓ Approximate age, sex.
 - ✓ Name, Father's name and address if available.
 - ✓ Position of clothing any other evidence found near the track.
 - ✓ Information given by the person, father's name and full address.
- The body to be left in charge of village chowkidar or any responsible person in the vicinity or lineman or gangman or gateman.
- If no one is available, it may be removed with the help of available assistance to the nearest gate lodge.
- If no gate lodge, it is to be carried and made over to the SM next station.
- In all cases a memo to be handed over to the SM with all particulars.

Q.165. DUTIES OF GUARD WHILE CLEARING LOADS FROM A ROAD SIDE STATION

1. Collect wagon way bill, BPC & seal memo from SM.
2. Before EOT ensure release of the chains and pad locks from wheel.
3. Remove the skid.
4. Adequate Air pressure is created and the Hand Brake are released.
5. PR 5.0 KG/CM² in engine and 4.8/4.7 KG/CM² in the Brake van.
6. Guard checks the train with respect to air leakage, Brake pipe leakage, door open.
7. Ensure that at least pistons of 3 wagons out of rearmost 4 wagons including brake van is in proper working order.
8. Keeping in view the stabling hour, Guard will take following action:

Stabling Hour	Action to be taken	Condition of BPC
0-12hrs	Only Air Pressure continuity test to be done.	BPC valid
12-24 hrs	GDR to be done, Brake power test is not mandatory. (time allotted for GDR-45 Minutes)	BPC valid
24-96 hrs	GDR to be done, Brake power test is mandatory. (time allotted for GDR-90 Minutes)	BPC valid
Above 96 hrs	GDR to be done, Brake power test is mandatory. The rake will be offered at 1 st TXR point.	BPC invalid

9. At road side station Brake power should not be less than 75% and for Ghat section 90%.
10. If the calculated brake power is less than that then memo should be given to SCR & C&W for further action.
11. GDR memo shall be prepared in Triplicate one given to Loco Pilot another to Guard and third kept at station
12. Seal memo is collected from the seal checker.

Q.166. DUTY OF GUARD BEFORE TAKING OVER CHARGE, DURING RUN AND AFTER ARRIVAL AT STATION:**BEFORE TAKING OVER CHARGE:**

- Report on duty in time (30 min before for coaching train and as notified in case of Goods train)
- Be in proper uniform.
- Give breathalyzer test.
- Sign on in CMS.
- Go through Correction slips, safety circular etc.
- Set watch according to the station clock.
- Collect all train papers like, Caution order, Wagon way bill, BPC etc and minutely observe the same.
- Check the following:
 - Wagon/Vehicle number and load of the train.
 - Marshalling order.
 - Whether properly coupled or not.
 - Hose pipe/brake pipe are properly connected.

- No audible leakage.
- Doors are properly closed and not open.
- Seal, hand brakes, empty load handle.
- Check the position of ODC if any and proper sanction obtained.
- Conduct continuity test with LP as per rule.

DURING JOURNEY:

- Properly exchange all right signal with all concerned staff.
- Be vigilant during entire journey.
- Ensure observance of all speed restrictions meticulously.
- Ensure safe running of train from time to time enroute and in curvature.
- Show danger hand signal to the driver and try to stop the train if any body shows danger hand signal.
- Give necessary protection and securing of train whenever required.
- Report any abnormality to SM and all concerned.
- Guide the LP and assist him whenever required.
- Enter all particulars regarding arrival departure of trains and detention in T/34 (HF) and Rough Journal.
- Assist the LP whenever required.
- Inform SM about any abnormal situation.

Arrival at station

- Ensure the Last vehicle is inside the fouling mark.
- Give Complete arrival report if required.
- Hand over all train papers to the SM at the end of journey.
- Obtain signature of SM in his rough journal book.
- T/34HF must be handed over to the LP.
- Remain on duty for 30minutes.
- Give breathalyzer test and sign off in CMS.
- In an intermediate station hand over charge to the outgoing Guard properly.
- Inform any abnormality in the train to the outgoing Guard.
- Hand over parcel luggage and B/V equipment, C/O and other train papers like vehicle guidance to the SM at the end of journey and obtain the signature in his rough journal book.

Q.167. DUTY OF GUARD WHEN THERE IS FIRE ON RUNNING TRAIN.

- As soon as Guard noticed fire on his train, he shall apply the hand brake to stop the train.
- Inform to the Loco Pilot.
- Isolate the vehicle immediately at distance of 45m.
- Train shall be protected 6.03 or 9.10
- Every effort shall be made to extinguish the fire and to save the wagon labels, seals and the contents of the vehicle
- Earth or sand if available shall be used.
- In the case of fire occurring in a passenger train, the safety of the passenger shall be first attended to.
- In case of postal van every effort shall be made to save the mails.
- In an electrically fitted carriage, if the wood work catches fire due to short circuit, the electric couplers at both ends shall be disconnected and the links from the battery fuse boxes removed.
- The fire appliances, available in the train and the engine shall be made use of in all cases where fire has broken out.
- The practice of keeping a lighted "Chula" or stove in a carriage is prohibited.

- In case of fire on any part of traction in the electrified section then information shall be given immediately to the TPC.
- The occurrence of fire shall be reported to the nearest SM.
- Guard shall report the matter in his Rough Journal and T/34HF.

Q.168. DUTIES OF GUARD WHEN FEELS HEAVY JERK OR LURCH ON TRAIN

- Guard must note down the location and km accurately.
- Ensure Loco Pilot to switch ON Flasher Light.
- If the jerk or lurch is dangerous for the passage of train, he will bring his train to a stop at the next station/cabin.
- Train will stop without clearing the block section. Ensure SM is informed through available means of communication.
- If the jerk is not so severe or dangerous, the guard should bring his train to a stop at the next stopping station/cabin
- Report the matter in writing to the SM or switchman as the case may be.
- On S/L section do not hand over the token to the SM until he has advised in writing.
- Guard shall give his remarks on his relevant paper(T/34 HF).

Q.169. DUTIES OF GUARD WHEN 'A' MARKER SIGNAL FOUND AT ON.

1. When Loco Pilot finds automatic stop signal at 'ON', he shall stop the train at foot of the 'A' marker signal and sound one long whistle to warn the guard.
2. Loco Pilot shall check the tail lamp and note down the Km, Time & no. of 'A' marker signal.
3. Loco Pilot shall wait 1min by day & 2mints by night at the foot of the 'A' marker signal.
4. After waiting for the above time, if the signal remains at 'ON' Loco Pilot shall pass the signal at ON sounding continuous whistle and exchange signal with the guard.
5. Speed of the train shall be 15/10 kmph.
6. Loco Pilot of the train shall ensure that a minimum distance of 150m or 2 clear OHE spans is maintained between his train and the preceding train or obstructions.
7. In case of EMU train, the distance may be reduced to 75m or one clear OHE span.
8. Guard shall made an entry to this effect in his rough journal and T-34HF.

Q.170. DUTIES OF GUARD WHEN TRAIN UNUSUALLY DELAYED:

If a train carrying passenger does not arrive within 10mint or a goods train does not arrive within 20 mints after its normal running time, then it is called train unusually delayed.

- The Loco Pilot and Guard of the train are responsible for sending the information promptly to the nearest station.
- The Loco Pilot shall try to clear the section by pushing back so that he can get over the gradient or by dividing the train after taking all precautions.
- After backing, the train will not be started unless alright signals receives from the guard.
- Before exchanging alright signal, it must be ensured by the guard that the train has come to a stand when moving forward, Guard shall be ready to apply hand brake if required.
- Backing over spring point is permitted only when it is clamped and padlocked and authorized by the SM.

- If the detention of the train is more than 15mints, loco-hand brake shall be applied in addition to application of vacuum/air brake.
- The guard of passenger train shall apply the hand brake of the B/V and sprags or wooden wedges or scotch block shall be used to wheels Two vehicles nearer to the descending grade.
- In case of Goods train, Hand brake of one third of the total wagon or 10 wagon from engine and 5 wagons from B/V which ever is more shall be pinned down.
- Special care or precaution shall be taken for roller bearing stocks.
- When the train is ready to start wooden wedges, sprags etc shall be released and the train will be about to start.
- Guard shall make an entry to this effect in his rough journal and T/34 HF

Q.171. DUTIES OF GUARD WHEN FOULING MARK NOT CLEAR

- Guard shall first check Tail Board or Tail Lamp of his train.
- The RED hand signal flag shall be placed in the hand rail.
- Guard shall come to cabin Plainly exhibiting a danger hand signal towards Station/cabin on his way thereto
- Guard shall inform the driver regarding not clearance of F.M. and possible steps to be taken for clearing the F.M.
- Guard shall record the fact in Rough Journal and T-34HF.

Q.172. DUTIES OF GUARD WHEN TRAIN PARTING:

- When a train detached during run automatically or unintentionally is called "Train Parting".
- In this situation, the LP shall not stop his first portion until the rear portion comes to stand.
- The LP shall sound One long One Short One Long One short (– 0 – 0) whistle to inform the Guard.
- The Guard shall immediately apply handbrake to control the rear portion.
- He will show green flag by day and white light by night waving it up and down vertically.
- If there is a banking engine in rear, the LP of banking engine shall try to control the rear portion and sound the prescribed whistle code i.e. One Long One Short One Long One Short (– 0 – 0).
- After stopping the rear portion, Guard shall protect the train in rear and front as per rule. When there is a banking engine , the LP of that engine shall protect in rear.
- If both portions stop within sighting distance then it may be coupled and clear the section. While coupling both portions, extra precautions may be taken to avoid rolling down of train.
- If coupling is not possible, the guard shall allow the front portion to the advance station.
- If the front portion reaches the next station, the LP shall inform the SM and sound prescribed whistle code that the train has arrived incomplete.
- When the rear portion arrives at the station and block section is cleared, the guard shall sign in the intact arrival register(T/1410) and report the matter to the SM in writing and the tangible authority is handed over to the SM.

Q.173. DUTIES OF GUARD WHEN HOT AXLE FOUND IN A TRAIN

1. When Train running with Hot Axle and is detected by the Guard, he shall Stop the train.
2. He shall advise the Loco Pilot about the Hot axle.
3. Check the Tail Board/Tail lamp and tie a red hand signal to the Hand rail.

4. The condition of the axle Box shall be checked jointly by the Guard and driver.
5. In case of Burning flame water shall not be used to extinguish the same
6. Use sand or soil to cool the axle box.
7. If the condition of Hot axle is not serious, Loco Pilot shall proceed to the next station cautiously and inform to the SM & TXR in writing.
8. Train shall be admitted directly on Main Line and indirectly on Loop Line.
9. If the condition of Hot axle is serious, Guard shall inform same to SCR through portable telephone for further action.
10. Necessary remarks shall be incorporated in the Guard's Rough Journal and T-34HF.

Q.174. DUTIES OF GUARD WHEN TRAIN DIVIDING:

- When the LP realizes that train or whole load cannot be hauled by his engine, he shall immediately stop the train and sound four short whistles (0 0 0 0) to inform the guard.
- If the engine is capable of proceeding onward either alone or with some vehicles, the guard shall take action to send it to next station.
- Before dividing the engine or vehicles, the guard shall ensure that the hand brakes of the remaining portion are applied and the vehicles are secured as per rule.
- The guard shall issue a written authority to the LP in a prescribed form T/609 to authorize the LP to divide the train and proceed to the next station.
- On T/609, guard shall mention the details about the number of vehicles, last vehicle number, Km no. of second portion and whether the engine has to be return on the same line to clear the remaining portion, if he considers that the engine is fit to do so.
- Before handing over T/609, the guard shall collect tangible authority, if any, from the LP and keep it in his safe custody until the whole train has cleared the block section.
- At night or in thick foggy weather impairing visibility, the guard shall protect the front portion of the remaining part and place a red light on front and rear side.
- While approaching the next station, the LP shall sound One Long One Short One Long One Short (– 0 – 0) whistle to warn the SM that the train is incomplete.
- If the token is an authority to proceed for the said train, the train may be admitted by taking off signals.
- If the station is provided with TLBI or train is worked on PLCT or other written authority, the front portion must be stopped outside the FSS and may be piloted in by issuing of T/369(3b).
- The remaining portion of the train may be admitted by taking off signals.
- After complete arrival, the guard shall sign on T/1410 and handover the tangible authority, if any, along with the written memo detailing the reason to the SM.

Q.175. DUTIES OF GUARD WHEN TRAIN ALLOWED WITHOUT B/V.

- In emergency or under special instructions train may run without Brake van.
- There should be adequate pressure from engine to rearmost vehicle.
- In BPC (Mech-V5) number and description of last vehicle should be mentioned by SSE(C&W).
- Guard at originating station shall relay the last vehicle number to the SCR and SM.

- LVI should be fixed at the tail end of the rearmost vehicle by the Guard.
- LV number should be repeated in line clear enquiry and reply message.
- SM/CM must ensure that the train is provided with LVI before closing the block section & before giving TES to the block station in advance.
- If the SM is unable to see the LVI of a passing through train, he shall at once inform the SM of station in advance to stop and examine the train. Until TOS is obtained SM shall not close the section.
- Guard shall travel in the engine.
- In automatic Block system or in Intermediate block signalling, a second train shall not be allowed to leave the block station unless the previous train without BV arrives at the next block station complete except in case of an accident or failure of the train.

Q.176. DUTIES OF GUARD WHEN TRAIN STOPS AT THE FSS.

1. When the stop signal of a station is at "on" position, the driver of an approaching train shall sound continuous whistle and stop at the foot of the FSS.
2. As soon as the train stops the guard shall check up the tail Board/tail lamp correctly exhibited.
3. Guard will remain vigilant in rear of the train.
4. After 5mints, the Loco Pilot shall sound continuous whistle to warn the guard and send ALP to station/cabin to inform the SM, ALP will proceed by exhibiting a stop hand signal towards the station.
5. Guard shall take action to protect the train in rear after a halt of 15mints.
6. Guard shall tie red hand signal flag to the hand rail by day or reverse the side lamp showing red towards engine at night, if provided.
7. **Protect the train by**
 - i) Four detonators at a distance of 600, 600, 10 & 10m in absolute Block system from the B/V.
 - ii) Three detonators at distance of 250-250-10 during total interruption of communication, when train is detained for more than 10mints.
 - iii) Three detonators at distance of 90, 90 & 10m in automatic block system after 15mints or such less time as may be prescribed by spl instruction.
8. The guard shall show red hand signal to stop any approaching train until he is recalled.
9. After the signal is taken off or when the Loco Pilot receives necessary authority to pass the signal at "on", Loco Pilot shall recall Guard by sounding continuous whistle.
10. When guard is recalled, he shall leave down 3 detonators on his way back and pick up the intermediate one.
11. Guard shall remove the red flag, which he fixed on the B/V or put back the side lamp to its normal position and give starting signal to the Loco Pilot.

Q.177. WHAT IS PUNCTUALITY ? WHAT ARE THE CAUSES THAT CAN AFFECT PUNCTUALITY ?

1. The efficiency of passenger train operation is judged by the punctuality of passenger services. Punctuality is calculated on the basis of percentage. Endeavor should be made to achieve 100% punctuality for all trains not only at destination but at intermediate stations also.
2. Passenger train punctuality is calculated on the basis of: -
Trains arriving destination right time (RT)

Train not losing time on the railway/division for which punctuality is being reckoned (NLT)

3. For example if 12809 Dn. Mumbai – Howrah mail is handed over by South East Central Railway to South Eastern Railway at Jharsuguda 30 minutes late and it reaches Howrah 30 minutes or less late, the train will be treated as not losing time (NLT) on South Eastern Railway.
4. The punctuality of coaching trains is worked out by the following formula:-

$$\frac{(A+B) \times 100}{C}$$

Where “A” stands for the number of trains arriving destination right time.

“B” stands for the number of inter railway trains not losing time in the system.

“C” stands for the total number of trains run on the system.

The causes that can affect punctuality:

Faulty time tabling –

If there is a defect in the time table, then no drive will assist in bringing up punctuality. Such defects may be crossings at wrong stations, bunching of trains at junctions with inadequate platform accommodation, inadequate time for shunting, engines of outgoing train are being held up at the ‘bahar’ line because of grouping of trains, etc.

Bad controlling:-

- Wrong crossing or precedence
- Ambiguous orders given to staff, permitting shunting on goods trains, or allowing goods trains ahead without being specific as to the time upto which this can be done.
- Stabling of goods trains at station with platform on the loop line.

Late berthing at starting stations:- This would result in a late start to the train. Though late berthing of the train may not always be due to operating ceases, it can be due to train examination or electrical department also, may be due to slackness of the yard staff .

Extra time at station for shunting:- this depends on the attitude of station staff and guards. Sometimes the control may also contribute to the delay by not informing earlier the station staff about the shunting to be done.

Delay in abstaining line clear or sending token to the Loco Pilot or taking ‘off’ signals by the station staff.

- Delay in abstaining line clear or sending token to the Loco Pilot or taking ‘off’ signals by the station staff.
- Dilatory working of the guard in supervision over loading, shunting or giving the signal to start the train at a station or taking extra time to take over or coming late for duty.

Operating (Power) & Mechanical: -

- Engine late on train on account of being turned out of shed late.

Engine failure:- An engine failure not only causes delay to the train which it is hauling but may affect the punctuality of other trains also.

- **Loco losing time:-**This may be due to mechanical cause, management by crew.
- Loco Pilots missing tokens, delaying in starting after getting the signals, or taking extra time in taking over.
- Extra time for train examination.

- Hot Axle on a train, or a carriage having to be detached from the train for any other cause. This not only causes delay to the train but also considerable inconvenience to the passengers.
- Air pressure trouble.

Signalling: -

- Defective signals, requiring trains to be piloting in and piloting out at station.
- Defective points, requiring the points to be considered as non-interlocked and consequent detention in there rectification.
- Poor visibility of signals requiring Loco Pilots to slow down and lose time.
- Failure of Block instruments and other communications between stations requiring abnormal working procedures to be brought into force for working of trains which necessarily dilatory.

Engineering:-

- Cautious driving on the line taking more time than provided in time-table.
- Engineering blocks given being exceeded.

Electrical:-

- Failure of overhead, failure of power.
- Failure of train lights/fans, A.C.
- Failure of Head light of the engine.

Commercial:-

- Detention due to disputes for reservations etc.
- Overcrowding
- **Alarm chain pulling-** This may be due to various cause, these cases are progressed by the commercial department.

Accidents and unusual occurrence:-

- Apart from accidents, various types of unusual occurrences can delay trains- passenger run over, passengers falling out of trains passengers getting sick, thefts and various other incidents taking place that delay trains.

Efforts to be made to ensure punctual running of trains:-

- Station and Running staff and control must understand clearly their duty to ensure punctuality in train running. Efforts must be made by all centered to make trine at station when a train is running late.
- LP must be alert and ready to start their trains immediately on receipt of the guard's signals. They must satisfy themselves that the signals have been taken off and they are in possession of correct and relevant authority to proceed if any before starting.
- In order to ensure punctual running, station masters must devote close attention to prompt loading and unloading of parcels.
- Packages intended for loading should be kept at the spot on the platform where the van usually comes to a stand.
- Guard must assist station master to avoid detention by advising control in advance when they have a number of bulky parcels for a station. The fully complement of ticket collectors, parcel and luggage clerks and hamals booked for duty must be on platform ready to commence their respective duties immediately the train arrives and the station Master concerned is responsible to ensure that this is done.
- Every endeavor should be made to make up time by a passenger train running late, at the refreshment room station where the halt of the train is 15 minutes or more. The refreshment room managers are to be intimated beforehand so that they will be in a position to serve the passengers expeditiously to avoid delay. The passengers are to be intimated about the approximate departure of

the train No time should be made up by a train with a halt of less than 15 minutes.

- Passenger train should not arrive more than 15 minutes before time.
- No passenger train should be started from a station earlier than the departure time shown in the public time-table.
- Trains carrying mail should not normally be detained at the stations for postal mails. In very exceptional cases trains may be detained on the written request from the sorter in charge for a few minutes not exceeding 3 minutes in any case. All such detentions on this account should be carefully booked in the guard's train report (T/34 HF) and the mail sorter's initial obtained against such entries.

Q.178. WRITE IN BRIEF ABOUT RAKE LINK.

- Block rakes are run according to links formed by PCOM with the object of optimizing utilization of passenger coaches consistent with proper maintenance.
 - ✓ Mail & Exp trains have generally rake composition uniquely suited to their specific requirements & as such rake links for such trains are generally exclusive & not a combined one for several trains.
 - ✓ For slow passenger trains a particular rake link may cover several trains which make it possible to improve utilization of rolling stock.
- Following points are to be taken into consideration while preparing rake link:-
 - ✓ The depot at which rake will be maintained has to be decided. Adequate halt to be provided for the rake for proper maintenance.
 - Where the halting time at terminal is too tight for the rake to start back , it is better to have an overlapping rake at the terminal.
 - Excessive lie over of rakes at preliminary & secondary maintenance depot should be avoided as far as possible.

Q.179. WHAT IS TIME TABLING? WHAT ARE THE DIFFERENT TYPES OF TIME TABLES ? WHAT IS THE NEED FOR A PASSENGER TIME TABLE ?

- The Time Tables are changed once on 1st July every year. Consequently the following types of Time Tables are published on this Railway and issued once in every year to come into force on the above mentioned dates.
- a) **Public Time tables:** These are handy volumes for use by the public and are printed in English and in regional languages. In additions to the time schedules they contain a variety of useful information for passengers including fare tables.
- b) **Suburban time tables:** - There are printed in English and in Bengali and are of pocket size. They contain in detail the timings of all suburban services as well as of other passenger services running over the suburban section and also abstract timings of other main line passenger.
- c) **Sheet Time Tables:** - These are exhibited on the notice boards of station, platforms and passenger waiting halls. They are printed in English and also in regional languages and contain the schedules of various coaching services, tabulated and brought together on a large sheet for ready public reference.
- d) **Staff copy of the Time Table:-** This is a copy of the time table meant for use by Railway staff.
- e) **Working Time Tables:-** these are issued separately for each division for the information and guidance of all Railways staff especially the running staff, station and control staff. These time table contain the schedules of all

coaching trains as well as of goods trains, and other valuable information such as load tables of goods trains, headquarters of divisional staff, permanent and semi permanent engineering restrictions and special working instructions. Along with the working time table on Appendix to the working time tables is issued for the use of Railway staff. This contains verity of information and instructions for the staff e.g. composition of trains, rake links, speeds over turnouts, particulars of Relief trains, conversion tables etc.

NEED FOR A PASSENGER TIME TABLE:-

- Publishing of a time table for passenger trains in essential for two reasons –
- a) Passengers must know arrival and departure times of various passenger carrying trains at various stations so as to programmed their journey accordingly and board the desired trains without waste of time.
- b) Activities of a number of departments involving a large number of railway staff have to be co-ordinate to enable successful running of a train. For example train engine has to be arranged in time, rake has to be examined cleaned and berthed, reservation of seats and berths have to be arranged and charts pasted, loading unloading of parcels etc. have to be done. With the help of published time-tables all staff involved know what they are required to do and when. Their activities are smoothly co-ordinated without having to order these trains every day.

FACTORS TO BE TAKEN INTO ACCOUNT FOR SCHEDULING PASSENGER CARRYING TRAINS:--

- Factors which effect time- table can be divided into two main headings –

- a) Passengers convenience
- b) Service requirements

PASSENGERS CONVENIENCE:-

- a) **Convenient Departures and arrival at Terminals and Important station:-**

- Passengers would normally prefer to start their journey after days work, say after 17.00 hrs. Ideal time for departure would probably be between 20.00 and 22.00 hrs. However, it could be stretched from 17.00 hrs to 24.00 hr on the other hand passengers would like to reach their destinations in the morning, so between 8.00 to 9.00 hre, this time could also be stretched from 6.00 hrs to 10.00 hrs, similarly arrivals and departures at intermediate big stations should be convenient as for as possible.

- b) **Speed and reasonable transit time: -**

- India is a vast country and a heavy density of passenger traffic is carried between distant metropolitan and other important towns separated by thousands of kilometers. It will be great convenience for long distance passengers if their journey could be covered over night without wastage of a working day. Speeding up long distance passenger trains and reducing the transit time is an important consideration for long distance passengers.

- c) **Appropriate Meal Halts:-**

- Appropriate meal halts for non-vestibule trains are imperative even when a dining car is provided on the trains. Base kitchens have also been set up at specified stations from where meals are supplied to the passengers, for which suitable halts have to be provided. Meal Halts are also necessary because a number of passengers may like to use catering facilities provided at stations. Provision of suitable meal halts has to be made in the time table.

- d) **Entraining and detraining of Passengers:-**

- Halting time at intermediate stations must be adequate to facilitate entraining and detraining of passengers conveniently. The length of the train

and the quantum of traffic at the station must be duly taken into account while deciding upon the halt.

- e) **Convenient Connecting Trains:-**

- Passengers may need changing from one train to other while going from mainline to branch line and vice versa. Scheduling of trains has to be so adjusted that the passengers are not required to wait for unduly long time at junction stations for connecting trains.

Q.180. WRITE IN BRIEF ABOUT COMMISSIONER OF RAILWAY SAFETY (CRS)

1. CRS is not a railway employee, functions under the ministry of civil aviation and his decision is free from fear and favour.
2. He also acts as Principal Technical Advisor to the Central Government in all matters pertaining to railway safety.
3. CRS is appointed by the central government.
4. His functions include
 - ✓ Holding of serious accident inquiries.
 - ✓ Prescribing maximum permissible speed.
 - ✓ Approving special class station working rules.
 - ✓ Safety standard of the railway.
 - ✓ Prior permission of passenger train running in a new line etc.
 - ✓ Issuing approved special instructions

Q.181. WRITE A SHORT NOTE ABOUT WARNING SIGNAL.(GR 3.65, 3.66, 3.67)

- ✓ It is used to warn the incoming train of an obstruction.
- ✓ It shall be red flashing hand signal lamp at night or a red flag during day.
- ✓ It is used while proceeds to place detonators.
- ✓ It shall be supplied to LP, Guard, Patrolman & Gateman or as prescribed by special instruction.
- ✓ It is supplied on working D/L, multiple line, Ghat section, sub-urban or automatic block territories or as prescribed by special instruction.
- ✓ The concerned servant has a correct knowledge of their use.
- ✓ It shall ready with them for immediate use.
- ✓ In-charge of concerned staff shall responsible to have a correct knowledge of their use.

Q.182. WRITE A SHORT NOTE ABOUT MODIFIED SEMI-AUTOMATIC STOP SIGNAL.

- ✓ It is placed in mid-section in between two stations in automatic section.
- ✓ It is placed in both on double line & single line.
- ✓ It controlled by station in advance.
- ✓ Its indications are provided at both stations.
- ✓ When the "A" marker is illuminated the signal works as Automatic stop signal.
- ✓ This signal is interlocked with the signals of station ahead and advance starter of rear station through track circuit or/and Axle counter.
- ✓ This signal is interlocked with the signals of station ahead and advance starter of rear station through track circuit or/and Axle counter.
- ✓ When working with "A" marker extinguished, the Advance starter of rear station shall assume "off" aspect or be taken off only when the line is clear upto an adequate distance beyond the mid-section modified semi-automatic stop signal.

- ✓ The mid-section modified semi-automatic stop signal shall assume “off” aspect automatically or be taken off only when the line is clear upto an adequate distance beyond the Home signal of the station ahead.
- ✓ The adequate distance mentioned above should not be less than 120 m in double line & 180 m in single line section.
- ✓ During abnormal conditions like fog, bad weather impairing visibility, the mid-section modified semi-automatic stop signal may be worked by extinguishing “A” marker in the manner prescribed under special instructions and this action shall also ensure that the “A” marker of Advance starter signal of the station in rear and Home signal of the station in advance shall also be extinguished.
- ✓ If LP finds the modified semi-automatic stop signal with ‘A’ marker extinguished in ‘on’ position unable to contact the Station Master of station ahead, he shall pass the signal at ‘on’ after waiting for 5 minutes at the signal and proceed cautiously and be prepared to stop short of any obstruction, at a speed not exceeding 10 kmph upto the next Signal and act as per aspect of this signal.

Q.183. WHAT IS INTERLOCKING? WHAT ARE THE BASIC PRINCIPLES OF INTERLOCKING? WHAT ARE THE VARIOUS STANDARDS OF INTERLOCKING?

- Interlocking means an arrangement of signals, points and other appliances, operated from a panel or lever frame, so interconnected by mechanical locking or electrical locking or both but their operation must take place in proper sequence to ensure safety.

Basic principles of interlocking:

- It shall not be possible to take off conflicting signals at one & at the same time.
- It shall be possible to take off signal for a running line only when:-
 - ✓ All points on the running line are correctly set and locked.
 - ✓ All points giving access to the running line from the siding and goods line are set against the running line.
 - ✓ LC gates, if controlled by interlocking are closed and locked against road traffic.
- A signal lever when operated must lock or back lock as necessary the levers operating the points and gate locks referred to above.
- Once a signal is taken off, it shall not be possible to alter the points, unlock the gate lever etc until the signal has been put back to “ON” position.
- When all signals are in “ON” position, all points which would be locked by taking off such signals must be free for shunting or testing purpose etc.
- It is impossible to take off a Warner signal until all the relevant stop signal in advance have been taken off.

MODE OF INTERLOCKING:

- ✓ Direct Interlocking
- ✓ Indirect Interlocking

DIRECT INTERLOCKING: In direct interlocking all lever of points locks and signals are concentrated in one lever frame and worked there from and the interlocking effected by electrical and mechanical means.

INDIRECT INTERLOCKING: When the points are set and locked from one place and signals operated from another place and another lever frame, the interlocking is affected by means of keys carried or transmitted from one place to the other. Such type of interlocking is called indirect interlocking.

STANDARD OF INTERLOCKING

- ✓ STD-I (R)-UPTO 50 KMPH
- ✓ STD-II (R)-110 KMPH
- ✓ STD-III (R)-140 KMPH
- ✓ STD-IV (R)-160 KMPH

TYPES OF INTERLOCKING

- ✓ Mechanical interlocking (MI)
- ✓ Panel interlocking (PI)
- ✓ Route Relay Interlocking (RRI)
- ✓ Solid State Interlocking (SSI) OR Electronic Interlocking (EI)

STD-I (R)

- Speed – 50 Kmph.
- Isolation – recommended on M/Line not essential.
- Points – facing points with key locking switches.
- Interlocking – indirect (by means of key locks)
- Minimum signals – 2A/MA

2A – outer, bracketed home and starter is optional.

MA – distant, home.

- Points Operations- Mechanical
- Interlocking: Key/Mechanical
- Preventing of SPAD: No
- Block Working (Minimum)- Token

STD-II (R)

- Speed – 110 Kmph.
- Isolation –Essential.
- Points – facing points with plunger type locking with switches and bolts.
- Interlocking – direct/indirect
- Signals – 2A/MA
- 2A- outer, Warner and bracketed home and starter when necessary.
- MA – distant, home, starter.
- Points Operations- Mechanical/Elect
- Interlocking: Mechanical/Elect/Electronic
- Preventing of SPAD: No
- Block Working (Minimum)- Token/SGE

STD-III (R)

- **Speed –140 KMPH.**
- Isolation - Compulsory.
- Points – facing points with plunger type locking with switches and bolts.
- Interlocking – Direct Interlocking.
- Signals – MA
- MA – Distant, Home and Starter.
- Points Operations- Mechanical/Elect
- Interlocking: Mechanical/Elect/Electronic
- Preventing of SPAD: No

Block Working (Minimum)- #SGE/TC

STD-IV (R)

- Speed – 160 KMPH
- Isolation - Compulsory.
- Points –Clamp type direct desirable.

- Interlocking – Direct Interlocking.
- Signals – MA
- MA – Distant, Home and Starter.
- Points Operations- Elect
- Interlocking: Elect/Electronic
- Preventing of SPAD: Yes
- Block Working (Minimum)- #SGE/TC

184. WHAT IS ISOLATION? WHAT ARE THE VARIOUS MEANS OF ISOLATION? WRITE DOWN THE NECESSITY OF ISOLATION & WHAT ARE THE SUBSTITUTES OF ISOLATION?

Ans:- Isolation means an arrangement secured by the setting of points or other approved means to protect the line so isolated from the danger of obstruction from other connected line or lines.

In other words, a train or 'vehicle' which is standing on one line should 'not come into contact with the running train on the other line and cause accident. It means separation of line or lines from other connected line or lines.

➤ **Various means of isolation are:**

- 1.Scotch block
- 2.Hayes Derail
- 3.Trap Switch
- 4.Derailing switch
- 5.Sand hump
- 6.Snag Dead end.
- 7.Over run line.

➤ **Means of isolation used as substitute of SOL:**

Derailing Switch,
Sand hump,
Over run line and
Snag dead

➤ **Kinds of Isolation : Two kinds**

Isolation of running line from non –running line.
Isolation of main line from loop line.

➤ **What is running line?**

- 1.Must be governed by one or more signals.
- 2.Must be used by a train for entering or leaving or running through and the line between two block stations.

➤ **What is non- Running line?**

- 1.Will not be governed by a signal.
- 2.Will not be used by a train from for entering or leaving or running through.

Necessity of Isolation:

1. To prevent collision between trains.
2. To provide STD-II,III & IV inter locking.
3. To provide simultaneous reception facility from opposite direction during crossing in S/L.
4. To provide simultaneous reception & dispatch facility in same direction on both S/L & D/L
5. To prevent unauthorized/wrong movements.

6. To perform shunting on isolated line even train is passing through.
7. To ensure safety.

➤ **Description of Isolation devices:**

Scotch Block:

1. A lump of log (wooden) covered with iron sheets and coloured red.
2. This will be connected with a chain and tied up on the earth.
3. This is placed across the rail and locked to prevent vehicles moving away.
4. If the vehicle moves the vehicle will derail.
5. This is used normally to isolate running line from non running line.

Hayes Derails:

1. This is a lump of iron piece worked by a lever, coloured red.
2. When the lever is operated this will rest on the rail and prevent vehicle from moving away.
3. In some cases this will work in conjunction with a trap point.
4. When the vehicle moves, the vehicle derails when the Hayes derail is on the rail.
5. This is normally provided to isolate running line from non running line.
6. The normal setting of points is open condition.

Trap switch:

1. This is a single rail cut.
2. This rail cut will be away from the adjacent line.
3. To provide isolation, the trap point will be open.
4. When it is open and if a vehicle/engine moves the vehicle will derail.
5. This is provided to isolate running line from non running and main line from loop line.
6. In some areas, Trap indicators may be provided in mechanical interlocking system.
7. It prevents unauthorized/wrong movements.

Derailing Switch:

1. This is an extended portion of track ending with some sand.
2. The distance from the point is about 15 feet.
3. This is used to isolate main line from loop line.
4. This is an efficient substitute for signal overlap under approved special instructions.
5. The normal setting of points is for derailing switch.
6. If the vehicle/engine moves, the vehicle/engine will derail on the sand at the end of derailing switch.
7. This should not be obstructed.
8. It prevents unauthorized/wrong movements.

Sand Hump:

1. This is an extended portion of track with sand at the end.
2. The length is 170 feet on the rising gradient with 1 in 60.
3. Starting from the point, first 50 feet is 1 in 50 and the next 60 feet is 1 in 30 and the last 60 feet is level.
4. This is an efficient substitute for a signal overlap.
5. This is used to isolate main line from loop line.
6. It provides simultaneous reception facility from opposite direction during crossing in S/L.

7. This should not be obstructed.
8. It provides simultaneous reception & dispatch facility in same direction on both S/L & D/L

Snag Dead end:

1. This is also an extended portion of track with buffers at the end.
2. This is also an efficient substitute for signal overlap and provided to isolate main line from loop line.
3. This should not be obstructed.
4. It provides simultaneous reception facility from opposite direction during crossing in S/L.
5. It provides simultaneous reception & dispatch facility in same direction on both S/L & D/L
6. Its length shall not be less than 180 M.

Over run line:

1. It is extension of loop line provided with a Trap point
2. This is an efficient substitute for a signal overlap.
3. This is used to isolate main line from loop line
4. The distance between signal & Trap point shall not be less than 180 M in TAS and 120 M in MLQ/MOMA.
5. It provides simultaneous reception facility from opposite direction during crossing in S/L.
6. It provides simultaneous reception & dispatch facility in same direction on both S/L & D/L

185. WHAT ARE THE CAUSES & REMEDIES OF YARD CONGESTION?

➤ **CAUSES OF YARD CONGESTION:**

1. Shunting Engine Trouble.
2. Shortage of Power & Shortages of Staff
3. Cross Traffic.
4. Sudden increase in the Inward Traffic.
5. Mixing up of Classification lines.
6. Congestion in the Neighboring Yards.
7. Late joining of GDR & Late start.
8. Unwanted Stock Stabled in the Yard
9. Delay in Train Examination and BPC.
10. Accident or other Unusual happenings.
11. Shortage of essential equipments for staff.
12. Accumulation of weight loads.
13. Accumulation of wagons in the Local Sdg, Goods Sheds, TP Points, Sick lines and Loco yards.

➤ **REMEDIES FOR YARD CONGESTIONS:**

- a) Stabling
- b) Diversion of Traffic.
- c) Regulation of Traffic
- d) Assistance from the neighboring yards
- e) Double Heads.

- f) Officers to Instruct.
- g) Shunting Engine.
- h) Power Utilizations.
- i) Increase in Inward.
- j) Cross Traffic.
- k) Local Sheds
- l) Technical
- m) Extra Stock.
- n) GDR.
- o) Yard Staff.
- p) Accidents.
- q) If the Trouble is due to Mixing Up of Nomination lines.
- r) Impose Restrictions

186. WHAT ARE THE CAUSES & REMEDIES OF YARD ACCIDENTS?

✓ REMIDIES TO MINIMISE YARD ACCIDENTS:

1. Careless of staff while working & Slack supervision.
2. Wrong operation of Points.
3. Confusion in understanding between traffic Signal & Driver while Shunting.
4. Excess speed contributed by jerks caused by the driver for unforeseen reasons.
5. Hanging Parts of Wagons.
6. Shifting of Loads.
7. Spread Gauge of tracks.
8. Tight Gauge of Track.
9. Insufficient No. of Sleepers, Keys etc. Poor Packing of Track.
10. While Humping, improper Pin down of Brakes either manually or Mechanically.
11. While Humping brake Binding of wagons being dashed by the wagons rolling from the rear.
12. Speedy humping dis-regarding Hump signals.
13. Stones (ore) falling on the track in sidings.
14. F.M. not cleared of wagons.

✓ REMIDIES TO MINIMISE YARD ACCIDENTS:

1. Staff should be alerted and know their jobs well.
2. Points should not be operated unless the 1st operation is completed by clearance of the wagon.
3. Meticulous attention should be paid by traffic staff and driver while shunting.
4. Uniformity in shunting speed depending upon the type of the wagons involved in shunting.
5. Before shunting it should be ensured that there are no hanging parts of wagons.
6. PWI to ensure proper maintain of track by frequent supervisions.

7. Before shunting free movement of wheels of wagon to be ensured.
8. Timely application of skids by skid porters.
9. Siding lines to be cleared of stones.
10. Ensure clearance of fleeing to avoids side collision.
11. Night Inspections by Supervisory staff.
12. Safety meetings to be conducted periodically with staff.
13. Last minute shunting/humping which shall be tedious to staff to be avoided especially at staff changing times.
14. Punishment should not be over looked to the staff responsible for accidents after impartial joint findings.

187:- WHAT ARE THE IMPORTANT REGISTERS MAINTAINED IN YARD?

1. TNC Hand Book (OP/T 100; I/ward & O/ward No. taking Book)
2. Running Balance Register
3. Link Cards (OP/T 441)
4. T/39 Register (Receipt and Dispatch Wagon Register)
5. QTS Register.
6. SQT Register.
7. Load detention Register (OP/T 417)
8. Yard Performance Register.
9. Perishable Register.
10. Tank Wagon Register.
11. Live Stock Register.
12. Food grain Register.
13. Sick Wagon Register.
14. Un-connected Register.
15. Floating Register

FILL IN THE BLANKS:

1. Maximum impact speed of a Single roller Bearing type wagon during Shunting is _____
2. Wagon Turn Round is expressed in __Days__.
3. The word "RETURN" stenciled on the end panels of a wagon indicates _____
4. Special Instructions are issued by _____
5. Running Balance Register is Maintained by _____.
6. Maximum speed in the Loop line of a standard III interlocked station is _____.
7. The normal aspect of an Automatic signal is _____.
8. A spring Broken Wagon when Clamped Shall be allowed with a restricted speed of -----Kmph.
9. ARME should be started within ---minutes after sounding of hooters in case of double exit siding.
10. Maximum number of Explosive wagons can be attached by a Goods Train is _____ and by Mixed/Parcel train is _____.

11. Maximum No. of 4 wheeler attached in rear of B/V of a fully braked Goods train is ____.
12. When a crane is attached to a train, the speed will be restricted to ____ kmph in straight line and ____ kmph in Turnouts.
13. Pooled wagons can be interchanged between different railways subject to the _____.
14. Maximum speed during Shunting is _____.

Q.188. DUTIES IF TRAIN IN A BLOCK SECTION WITHOUT AUTHORITY TO PROCEED.

If the LP becomes aware of the fact that he does not have proper Authority to Proceed, he will take following action:-

- (1) The LP shall stop the train immediately.
- (2) He shall sound 0 – 0 (One Short One Long One Short) whistle and guard will acknowledge it by waving red hand signal up & down.
- (3) LP & Guard shall protect the train as per rule.
- (4) Information to be send to the SM by any means of communication or by sending ALP or any other railway servant or through LP/Guard of the train passing over the adjacent line.
- (5) SM on getting information shall inform the same to the other end station and Section Controller.
- (6) SM shall issue a written authority by issue of C/O in consultation with other end SM authorizing the LP to go ahead to the next station or to push back.

Duties of SM:

- On getting such information, inform SM at other end & SCR.
- Issue a written authority i.e caution order to go ahead or push back in consultation with SM at other end.
- ❖ When a train enters after passing approach (C class stations) and or departure signals of station and enters into the block section without authority to proceed:
 - Inform SM in advance by giving six pause five on double line and six pause 4 on single line also saying loudly on block phone.
 - Inform TPC directly or through SCR supported by P.NO. immediately to switch off OHE.
 - Adv. Station SM, shall ensure all signals are at "ON".
 - Route set & locked for clear line preferably Main line.
 - Arrange to place 3 detonators 10m apart as far away from starter as possible (Between Home & starter).
 - Train shall not be turned into dead end or derailed unless necessary to avoid more serious accident.
 - Vehicles containing passengers or live stock must not be derailed.
 - If train stops at FSS, reception should be done as per rule.
 - Detonators to be removed before admission.
 - Till complete arrival at next station Block instrument shall be kept at "TOL" and signals at 'on'.
 - ✓ If station staff or gateman shows danger hand signal to the Guard, he will try to attract the attention of LP and take every action to stop the train.

Q.189:- WHAT IS SECTION CAPACITY? WHAT ARE THE MEASURES TO IMPROVE SECTION CAPACITY OF A SECTION ?

Section Capacity” is defined, as the number of trains that can be run each way over a given section of the Railways in 24 Hrs.

Section capacity=Line capacity

This could be expressed in three different ways: -

- i) Maximum line capacity
- ii) Practical line capacity
- iii) Economic line capacity

Maximum line capacity :

Represented by the maximum number of trains that can be accommodated in the master chart, so that it is not possible to introduce even a single more train on the section concerned.

Practical line capacity:

Represented by the actual number of trains per day which is derived from the maximum line capacity by making allowances for factors such as time required for maintenance of PERMANENT WAY, OHE,S&T, Operating Irregularities.

In calculating the capacity of a section it is necessary to take into account, the possibility of operating irregularities, incidents & delays. This is done by inserting “Time Allowances” gaps between the line occupation time. The maximum permissible time allowance is known as “Tolerance”.

Economic line capacity:

Optimum number of trains which can be run on the section economically. When line capacity is under utilized, increase in train services follows the pattern of law of increasing returns due to more intensive utilisation of fixed asset. As the number of trains operated on a section increase, the section gets saturated, thus making it difficult to increase the services without time loss.

Calculation of Line Capacity:

Scotts Formula:

- Double Line $N = \frac{24 \times 60}{R+5} \times \frac{7}{10}$
- Single line $N = \frac{24 \times 60}{R+5} \times \frac{7}{10} \times \frac{1}{2}$

Where – N represents the number of trains each way in 24 hrs,
24 x 60 represents the no of minutes in a day.
R— Represents running time of a goods train in minutes over the ruling section (the section over which the running time is the longest)
5 – Represents the time in minutes allowed for ‘block working’
7/10--represents the efficiency factor (to cater for delays due to human element & for the effects of irregular distribution of trains over the day)

Methods for improving the capacity of a section:

- i) **Intelligent schedule of Goods train.**
- ii) **Close & constant supervision.**
- iii) **Increase in speed of trains** - Could be achieved by inducing better -
 - Motive power
 - Rolling stock
 - Signaling & interlocking
 - Track
 - Cab signaling – Cab signaling envisages visual or audible warning in the drivers cab so as to indicate to him the condition of section ahead.

vi) Reducing block operating time by

- a) Direct exchange of token
- b) Tokenless block instrument
- c) Panel interlocking, RRI, SSI etc
- e) Centralised traffic control
- f) Automatic signaling.

vii) Increasing efficiency factor “E” is possible by –

- a) Time table improvement
- b) Reducing disparity in intersectional running time
- c) Review of sectional running time.

viii) Extended trips as Bullet trains, Jet trains etc.

ix) Improve maintenance of equipment i.e, locomotives, wagon and coaches, points & signals, telecom system.

x) Providing adequate no. of loop lines.

xi) Providing simultaneous reception and despatch facilities.

xii) Providing standard III interlocking.

xiii) Reduce speed restrictions.

xiv) Provision IB signal.

xv) Increase Loop capacity.

xvi) Provision of curve switches & long welded rails etc.

xvii) Convert un-manned to manned interlocking gates.

xviii) Construct road under/over bridges.

xix) Reduce asset failures.

xx) Prevent Block burst, Banner flag & section congestion etc.

Q.190:- WHAT DO YOU MEAN BY ENGINE TURN ROUND? WHAT ARE THE MEASURES TO IMPROVE ENGINE TURN ROUND?

- The period from the time the engine leaves the home shed till returns to the home shed. This period is much more prolonged and during this interval the loco works train from the base yards through a number of out stations going from direction and often from Railway to Railway.
- The movement of the locomotive is governed by the requirements of traffic and its own requirements to take fuel in the case of diesel or trip examination, in the case of electric, can well be done in the yard premises itself.
- The usage of these locomotives has to be closely watched by the control, an eye has also to be kept at the same time on its next schedule so that it is returned to the home shed for the purpose.

Factors to improve E.T.R:-

- Trains should not be stopped outside signals for want of room.
- Trains should not be stopped frequently for picking of the staff.
- Engineering restrictions should be reduced.
- Proper maintenance of engine
- Trains should not be detained enroute for want of relief.
- Proper train ordering
- Reduction in time of C& W examination
- Proper controlling to avoid looping of the train
- Reduction in time for crew changing for yard pulling trains.
- Traffic block should be judiciously given.
- Lie over period of coaching power should be fully utilized.
- Cross running of light engines should be avoided

Q.191. WHAT DO YOU MEAN BY WAGON TURN ROUND? WHAT ARE THE MEASURES TO IMPROVE WAGON TURN ROUND?

This figure expresses the ratio between the total number of serviceable wagon on a Railway and the number of wagons required daily for effective use on the Railway for its outward, inward and transshipment traffic.

It is the time interval between two successive loading of a wagon.

- WTR is expressed in days

Formula To Calculate Wagon Turn round :-

$$\text{Wagon turn round (T)} = \frac{\text{No of effective wagon holding (S)}}{\text{Loaded Wagon (L) + Loaded Received Wagons (R)}}$$

Where 'S' stand for the effective daily wagon holding or midnight wagon balance of a day (excluding sick, POH wagons in or waiting for shops, like departmental wagons, wagons lent for departmental use, and the wagons used for coaching traffic). 'L' stands for the total number of wagons loaded on the Division / Railways plus the wagons loaded at Transshipment Point, 'R' stands for the total number of loaded wagons received from other Railway / Divisions.

- A drop in the figure of wagon turn round is a healthy sign which ordinarily indicates better wagon mobility and less detention. Endeavour should be made to keep this figure low.

Factors to improve WTR

- Detention in the yard to be minimized
- Detention in the loading/unloading point to be minimized
- Loading/unloading time to be reduced by offering various scheme to customer
- Mechanized loading/unloading
- 24 hrs siding working
- MGR system
- Right time start of trains at starting/intermediate station
- Judicious controlling
- Utilization of powerful locomotive
- Speed of the train to be increased
- Speed restriction to be curtailed
- Proper maintenance of signal, OHE, track
- Terminal facilities to be improved
- Wagons to be loaded soon after unloading
- Wagon holding should not be more than requirement

Q.192.WHAT IS THROUGHPUT? HOW THROUGHPUT OF A SECTION CAN BE INCREASED?

Throughput of a section is the total quantum of traffic that can be transported over the section in a period of 24 Hours.

This include both passenger throughput and goods throughput.

The passenger throughput can be measured in terms of passenger Km., which is carried over the section in 24 Hrs. Goods through put is expressed in terms of Traffic carried

a) No. of wagons or

b) Gross tonne-Kms. or

c) Net tonne – Kms carried over the section in 24 Hrs.

In Railway parlance throughput generally refers to goods throughput, which is expressed in Net tonne Km.

Throughput cab be increased by

i) Increasing the section capacity

ii) Increasing the load of the train.

Throughput can be increased without increasing the section capacity by the following:-

a) To run the train with full load.

b) By running more loaded trains.

c) Empty haulage of train should be minimized

d) Increase load of the train with the instruction contained in the policy of Railway Bd. to load the different wagons with CC+6+2, CC+8+2 tonnes.

e) Utilizing high capacity loco motives.

f) With light weight wagons with high capacity loads.

g) Quick clearance of road side loaded sick wagons.

h) Running long haul on Loaded trains.

i) Utilization more CC rakes & Premium rakes in back Loading system.

j) Reduce post load detention.

k) Reduce rejections in loads.

Q.193. DESCRIBE CONTROL ORGANISATION.

1. Controls the movements of all trains throughout the division.

2. Each division has one control office.

3. Each division is divided into different sections according the density of traffic.

4. Each control section has control board manned by a section controller round the clock.

5. Each control board provided with Control Office Application & Communication system with all facilities.

6. All boards are supervised by Dy.CHC/CHC's

7. Control Office is also manned by officials of different departments such as TLC, TPC,DPC,S&T, Engg., Comml., Electrical etc

8. Overall supervision is done by CHC (P).

9. In some divisions provided with Area control, Yard control etc. for better movements.

10. Control Office is provided with FOIS, ICMS system integrated with COA.

➤ **Functions of Control Organization:**

1. Round the clock supervision of the movement of traffic for achieving better operations.

2. Charting of all train movements for better crossings and precedence judiciously.
3. Arranging goods trains to the best possible path.
4. Arrangement of Blocks.
5. Ensuring optimum utilization of Assets.
6. Arranging relief for crew guard.
7. Issuing instructions at the time abnormal working of trains. (TSL working)
8. Remedial actions when the yard & section is congested.
9. Monitoring of safety, security & punctuality of train movements.
10. Prompt action in relief & rescue operations at the time of accident.

- ✓ **CONTROLLER (SCR):** Controller means a railway servant on duty who may for the time being be responsible for regulating the working of traffic on a section of a railway provided with the system of speech communication.

Duties of SCR:

1. Report 30 minutes before for duties.
2. Study the control chart, Restrictions and related documents carefully.
3. Arranging efficient running of trains in sections, crossing and precedence by giving clear orders well in advance.
4. Plotting neatly and clearly the movement of all trains in the control chart.
Giving remarks in spl. events
5. Informing terminal station, Loco sheds etc for late running of train to avoid calling of crew and Guard
6. Watching the working of marshalling yard.
7. Intimating the station in advance for shunting works.
8. To inform station in advance for Loading/unloading particulars to the guard & SM.
9. Keeping close touch with Engg and Power Blocks and working of Material trains.
10. Keeping watch of detached vehicle at road side stations for their repairs and clearance
11. Maintaining the Various registers prescribed from time to time.
12. Passing messages regarding reservation, and meal messages etc.
13. Timely arrangement to reliever for Crew & Guard.
14. Relay information to all concerned in case of accidents.
15. Carry out any other duties allotted by Dy. CHC, CHC or any other officers.

- ✓ **TRAIN CONTROL CHARTS:-** Each SCR shall record on control chart the movements of all trains over his/her section on receipt of information from each station during his/her duty hour.

Each control chart is printed for an 8 hour working shift.

It represents Horizontal & vertical lines of distance & time.

Both sides of vertical line shows Station Names, codes, with Stn.Kms.

One hour divided into 6 equal parts, each part 10 units & each such unit further sub-divided into 5 smaller units of 2 minutes each.

Date, Distance between consecutive stations in Kms.

Code initial of each station on the Rt. Hand side.

TRAIN CONTROL CHARTS:-

Red- for M/E & other top priority trains.

Blue- Passenger Trains.

Green- Military Special, Other Goods Train (BCN)

Black- Goods trains.

Up trains from bottom to upwards from left to right diagonally.

Down trains from upwards to bottom from left to right diagonally.

Advance plotting of Mail/Express to make perfect Planning of Engg. Blocks

- **MASTER CHART:** these are 24 hours charts basically similar to train control chart prepared for each section separately and to show the scheduled paths for all mail/express/passenger trains according to time table in force. In between the running of trains carrying passengers, paths for goods trains are worked out and plotted. Such charts are called master charts.
- These are helpful in revision of time tables, running of extra trains and arranging engg. Blocks and for working out line capacity.
- For guidance of scr these charts are displayed on the boards to which they refer.

REGISTERS MAINTAINED IN THE CONTROL OFFICE

- SCR's diary
- Inward message book
- Damage wagon register
- Work order book-allotment, supply, load & empty clearance.
- TN register-incoming & out going.
- Out station T.O. book
- Yard state register
- Caution order register
- Private number book.
- Yard balance register.
- Order number book
- Forecast & acceptance book
- Train order book.
- Goods train performance register
- Coaching train performance registers
- Unsatisfactory registers.
- Night order book.
- Accident registers
- ODC register.
- Power position book
- crew position register-home & out station
- Work shop & shed position
- Diversion & rebooking register.
- Conference & local instruction register.
- Detention register.

CONTROL ORGANISATION:

1. It is the nerve centre of the Division and control the movements of all trains.
2. Each division has one Control Office.
3. Each division is divided into different section according to the density of the traffic.
4. CHC is all over in charge of the each control office.
5. Different Boards are manned round the Clock kept watch over the happens on the line.
6. In control office there is an elaborated telephonic circuit provided to connect station yard loco shed etc.

7. A traction control is also provided in electrified area.
8. One Power control is provided to coordinate all the boards

FUNCTIONS OF THE CONTROL ORGANISATION:

Functions of the control is divided in three heads

- Train control
- Traffic control.
- Power control

Train control:

1. Ensuring the Punctual running of M/Exp and Passenger trains.
2. Running of Goods Train to best possible Paths and minimize detention en-route.
3. Arranging the running of Engg, Material trains
4. Arranging Engg. and Power Blocks in such a way without disturbance of M/Exp & Passenger trains
5. Arranging relief for crew and guard.
6. Arranging relief and regulating trains in the event of accidents.

Traffic control:

1. Allotment and distribution of Coaching and Goods stock.
2. Securing maximum utilization of stocks.
3. Regulating traffic for full filling the interchange commitment.
4. Securing maximum workable loads for each train with proper engine.
5. Ensuring correct marshalling of the trains

POWER CONTROL:

1. Requisition of Power for all operating requirements like Train working ,shunting and Banking.
2. To ensure the most economical use of power.
3. To ensure the return of power to home running shed

Q.194. WHAT IS FOIS? WHAT ARE THE ADVANTAGES OF FOIS?

- ✓ FOIS means Freight Operations Information System
- ✓ It captures various relevant data input of freight operations & commercial activities on real time with continuous up dated process.
- ✓ It provides complete real time information to Managers for planning, execution, organizing and monitoring the operations & commercial activities performed at various Stations, Yards, Sidings and Goods sheds etc.
- ✓ It captures all operational functions such as train arrival & departure, rake placement & release, reports of interchange, loco holding, wagon & rake holding etc. and goods shed functions such as delivery, booked delivery, demand registration to RR generation including the details of e-payment etc.
- ✓ It comprises of two modules such as RMS & TMS
 - RMS: Rake Management System. This system captures of all freight operational activities which are pertaining to various yards and terminals such as train arrival & departure, rake placement & release, reports of interchange, loco holding, wagon & rake holding etc.
 - TMS: Terminal Management System. This system captures of all freight train of commercial activities which are pertaining to various goods sheds and commercial related sidings such as delivery, booked delivery, demand registration to RR generation including e-payment details. Now-a-days on-line demand registration facility is also provided to customers.

✓ **ADVANTAGES OF FOIS:**

- Provides information fast, accurate & same to all.
- Find out the missing & unconnected wagons.
- Provides requisite field information.
- Saves valuable time of managers for collecting information.
- Mitigate the congestion through its advance information.
- Provides better monitoring system for cc & premium rakes.
- Increases energy & efficiency level of the managers.
- Provides at glance freight accountal, e-payment & earnings.
- Provides long term plans to increase section capacity.
- Transparency in sharing of information with customers.
- Assists managers to optimise asset utilisation.
- Provides current status of consignment to customers, to gain customer satisfaction.
- Facility to obtain distances through RBS
- Facility to obtain all latest commercial rules.
- FOIS information shall be obtained through internet.

Q.195:- Differentiate between RMS & TMS.

RMS (Rake Management System)	TMS (Terminal Management System)
a) Captures all operational activities	a) Captures all freight commercial activities
b) Captures terminal detentions	b) Captures demurrage & wharfages
c) Provides Asset Utilization & maintenance accountable	c) Provides freight earning accountable
d) Provides information of rake, wagon & loco holding details	d) Provides information of to-pay, paid & weight only traffic details
e) Provides information of NTKM, GTKM etc	e) Provides information e-payment & e-demand details
f) It does not prepare Balance sheet & RR generation.	f) It prepares Balance sheet & RR generation.
g) It dealt with P1 & P2	g) It dealt with P3

Q.196:- Write short note on CREW MANAGEMENT SYSTEM (CMS).

- a) CMS is unique system
- b) In which accuracy and monitoring is automatically maintained.
- c) Where in all functions like crew booking, call served to crew, signing on & signing-off duties are done through computers after ensuring their rest, training and medical particulars etc.
- d) Crew booking is done through SMS, thus eliminate the manual serving of call book for crew, saves manpower and time etc.
- e) Morning position of crew strength at various crew booking locations.
- f) Alerts for crew strength at particular crew booking point going below a critical limit.
- g) Automated alerts for their nominated Inspector, for crew becoming due for monitoring.
- h) The crew can have his personnel information like turn of crew booking, Status, PME, Mileage and other Training due dates on his Mobile.
- i) Congratulations on birthdays to crew members of whose date of birth are with the database.

Q.197:- INTEGRATED COACHING MANAGEMENT SYSTEMS (ICMS).

MODULES IN ICMS:

- ✓ **Punctuality Module (PAM):** For Post facto analysis of punctuality loss and its causes (not an on-line system), Captures train running at Originating/ Terminating and interchange points and the causes of detention. Data input predominantly at Divisional HQ level.
- ✓ **Coaching Operations Information System (COIS):** Captures events on Coaches/Rakes, Generates Reports for Management of Coaching Stock. Data input predominantly at Station/Coaching Yard level.
- ✓ **COIS Data Entry Module:** Support module of ICMS, to maintain database pertaining to the information of Rake Links, Yard Infrastructure, Coach Master, Train Schedules etc. Data input at Zonal HQ level.

a) PAM:

Feeding mostly at divisional level. Interchange owning division controls the data feeding for handing over or taking over, Zonal client does the responsibility fixing (deciding the trains “lost in punctuality”).

Activities include:

Originating terminating, interchange timings.

Detention Reports.

Cause wise logging

Fixing Responsibility

b) COIS:

Unlike PAM - no concept of data “feeding” in COIS. Instead working on the system at station/yard level leads to generation of required data (and memos for the operator). This works as input for MIS. All station/yard activities from arrival to departure of rake are captured:

- ☞ Yard stock entry
- ☞ Dispute Resolve
- ☞ Yard Position
- ☞ Sick Marking
- ☞ Rake formation
- ☞ Sickline Placement
- ☞ Sickline Operation
- ☞ Modify consist
- ☞ Shop Marking
- ☞ Movement Shop Placement
- ☞ Movement (Yard to yard)
- ☞ Remove fit available coaches
- ☞ Rake Examination
- ☞ Search Feedbacks
- ☞ Departure Reporting
- ☞ Send Feedbacks
- ☞ En route Attachments/Detachments
- ☞ Generate memo
- ☞ Arrival Reporting

Q.197:- Rake Allotment System (RAS):

Computerized system for allotment of iron ore rakes in advance to customers under this system.

RAS Features

1. Loading stations / sidings of the division are demarcated into congested/non-congested sectors.
2. Capacity of each loading terminal will be earmarked separately for Priority 'C' and WIS 'D'.
3. Allocation of rakes is done on the basis of pro-rata entitlement for programmed traffic i.e. CBT, Priority 'C' and WIS consumers.
4. Allocation, once made, for programmed traffic will remain valid for 15 days for allotment.
5. Entitlement for programmed traffic will lapse, if indents are not placed timely as per allocation.
6. Consumers may please ensure availability of indents matching with the entitlement at regular spacing.
7. The main criteria for allotment are allocation, availability of indent, loading capacity of the station, unloading capacity of the terminal, route capacity and quota for export.
8. Fresh allotments at a loading terminal are withheld, whenever number of pending allotment exceeds three times of the loading capacity of the terminal.

Q.198.- What is CONTROL OFFICE APPLICATION (COA) ? What are the features of COA?

- It is a comprehensive software for the automation of Control Charting at a railway divisional control office.
- Developed by CRIS. (Centre for Railway Information System)

Functions:

- ✓ Replaced tedious manual plotting of running trains on a chart.
- ✓ It is intended to provide the Traffic Controllers good look-and-feel and user-friendly work environment.
- ✓ The integration with allied systems like FOIS, NTES and COIS.
- ✓ It facilitates the flow of data on real time basis to adjoining divisions to enable train operations without dependency on human interference.
- ✓ The application will have interfacing capability with Data Logger to capture data pertaining to train movements in the final version of the product.

Benefits of COA:

- ✓ Better planning and decision-making in train operations.
- ✓ Increased operational efficiency.
- ✓ Fully Automated work environment.
- ✓ Aid to the controller in terms of efficiency, precision & time management.
- ✓ Leverage to Controller's Experience in decision making through manual forecast.
- ✓ Real time information on train operation without human dependence.
- ✓ Backbone system for sharing of data between allied systems.

Functions of COA:

- ✓ Train Ordering
- ✓ Maintain Train Information
- ✓ Manage Train Movement (Abnormal Working, Stabling, Banker Movement)
- ✓ Report Unusual Occurrences.
- ✓ Management of Maintenance Blocks

- ✓ Caution Orders
- ✓ Plot Graph.
- ✓ Advance Plotting.
- ✓ Maintain referential data
- ✓ MIS Reports
- ✓ Yard Management Siding
- ✓ Miscellaneous Functions
- ✓ View Station Layout

Q.199. GRANTING OF ENGINEERING BLOCK.

1. When any operation involving interference with permanent way or signaling/interlocking gear is to be undertaken whether within or outside station limit and the work is of such nature as to require blocking of line, the Engineering official responsible for such operation shall issue an advice in writing to SM concerning his intention to undertake the work.
2. The SM before allowing Engineering block obtain permission from SCR.
3. The SCR after verifying the movement of traffic shall allow the block, after that the work may be started by Engineering officials in consultation with SM.
4. These orders to be entered in TSR, caution order register, SM's Diary in red ink.
5. SM shall exchange block message supported by P.No. with SM of the adjoining block station
6. SM to inform both the end cabins supported by P.N.
7. During Engineering block, lever collars/Button collars/Line Block level shall be placed on point, slot, lock and signal levers
8. During Engineering block no traffic shall be allowed to enter the obstructed section.
9. Material train/Motor Trolley may be allowed into the obstructed section on the authority of block Ticket under the supervision of JE/SE/SSE(P-WAY).
10. A line block when once imposed shall continue to be enforced until a block removal message is received from the engineering officials.

Q.200:-What do you mean by Marshalling & explain in detail:

Marshalling of trains means arrangement of engine, wagons, coaches or any other vehicles in a train in a sequence as prescribed in the rules for safe, convenient and punctual running of trains.

Object of Marshalling:

Safety, Operational feasibility & Passenger convenience

- The composition of all coaching trains should be as per the rake links.
- Normally, no train shall run under load.
- In emergency train may be allowed to run under load.
- The normal rake composition be restored as soon as possible.

MARSHALLING ORDER OF COACHING STOCK

- ✓ In case of Mail/Express and passenger trains anti-telescopic/steel bodied SLRs must be marshalled as the last coach at both ends of the train formation ensuring that the luggage and brake van portion is trailing outermost or next to engine.
- ✓ In case of Mail/Express train at least two and in case of passenger trains at least one anti-telescopic/steel bodied coaches should be marshalled inside the anti-telescopic/steel bodied SLRs at both ends.
- ✓ In case it is inescapable to utilize wooden bodied SLR, such SLR should be marshalled inside two anti-telescopic/steel bodied coaches in case of

Mail/Express trains and one anti-telescopic/ steel bodied coach in case of Passenger train.

- ✓ In case of short distance shuttle having a composition of 5 bogies, only one SLR (whether anti-telescopic/steel bodied) coach in front and rear of the train formation
- ✓ VPs, LRMs and WLRMS should preferably be marshalled as outermost vehicles at either end.
- ✓ Inspection carriages whether occupied or not whether anti-telescopic/steel bodied or not and occupied by Railway officers, may be marshalled as operationally convenient.
- ✓ Sectional/through service coaches/reserved coaches occupied by passengers and saloons occupied by VIPs whether anti-telescopic/ steel bodied may be marshalled as operationally convenient. In case such coaches are not anti-telescopic/steel bodied, they must be marshalled inside the required number of anti-telescopic/steel bodied coaches.
- ✓ Attaching of vehicles behind the rear brake van: Maximum 2 vehicles in addition to that of an inspection or officer's carriage.
- ✓ In case of short service trains : 3 coaches in front or rear of SLR, in addition to this one inspection carriage may be attached.
- ✓ Reserved coaches and saloons occupied by VIPs: shall be treated as passenger coach and marshalled accordingly.
- ✓ Sectional/Through service coaches : As operationally convenient.
- ✓ POH/Sick coaches returning to shops: If locked and windows secured then may be attached next to engine or rearmost.
- ✓ If not locked, should be treated as passenger coaches and marshalled accordingly.

MARSHALLING ORDER OF GOODS STOCK:

i) 4-WHEELER WAGON:

4-wheeler wagon shall not be marshalled between two bogies or between the engine with a bogie tender and bogie stock. But a Match Truck fitted with center Buffer coupler may be marshalled between two bogies or between the engine and bogie stock

ii) WAGONS CONTAINING EXPLOSIVE:

The maximum number of wagons containing explosives may be attached to a goods train shall be 10 and to a mixed or parcel train shall be 3.

Wagons containing explosives shall be separated by not less than-

- a) One wagon from the train locomotive (Electric, Diesel)
- b) 3 Wagons from the Passenger carriage or the brake van.
- c) 3 Wagons from other wagons containing other dangerous goods/inflammable article, such wagons shall be close coupled.

iii) WAGONS CONTAINING PETROLEUM AND OTHER INFLAMMABLE LIQUIDS:

No restriction on number of wagon to be attached on a train. Wagons containing petroleum and other inflammable liquids class 'A' shall be separated by not less than-

- a) One Wagon from the train locomotive (Electric, Diesel).
- b) 3 Wagons from the passenger carriage or the brake van.
- c) 3 Wagons from other wagons containing explosives/ other dangerous goods/inflammable nature

Wagons containing other inflammable liquids class 'B' shall be separated by not less than-

- a) One Wagon from the train locomotive.
- b) One Wagon from the passenger carriage or brake van.
- c) One Wagon from wagons containing dangerous goods or inflammable articles.
- d) Two wagons from wagons containing gases, compressed liquefied or dissolved.
- e) Three wagons from the wagons containing explosives.

iv) LIVE STOCK WAGON:

- i) As a general rule Live Stock Wagon be marshaled in rear of the train.
- ii) At least 7 wagons intervening between the livestock wagon and the engine.

v) CRANE : The crane should be as a rule be placed four vehicles from the engine, but when proceeding to a break down this condition may be relaxed.

vi) DEAD ENGINE:

- ✓ The dead locomotive may be attached next to train locomotive on section where double heading is permitted. The total number of locomotives shall not exceed three, which are 2 live +1 dead (brake operative).
- ✓ If the dead locomotive is required to be attached on a double/multiple headed train or on a section where double/ multiple heading is not permitted, the dead locomotive shall be attached at a minimum distance of 11 ordinary wagons or 91 meter or a minimum distance equal to the largest span of the bridge in the section.
- ✓ At least ten fully air braked 4 wheeler units shall be attached behind the dead locomotive.
- ✓ A dead locomotive may be attached in rear with hand brakes in working order and a competent person is travelling on the dead locomotive.

vii) MARSHALLING OF EXPLOSIVE WAGONS:

1. Maximum no. of Explosive wagons in a Goods train is 10.
2. Maximum no. of Explosive wagons in a Mixed or parcels train is 03.

State True or False: -

- INTERMEDIATE BLOCK POST is a Block Station. **T**
- Trap Indicator shows Red if the trap is in open condition. **T**
- The speed of train after passing an automatic stop signal at 'ON' is 15/8 kmph. **F**
- Block ticket must be collected and pasted with the concerned record foil at the issuing station. **T**
- If patrolman does not turn up within 15 minutes of his scheduled arrival, the SM on duty shall take action as stipulated in the rules. **T**
- IBSS is a home signal provided at an intermediate block post. **T**
- A train stopped in the block section for any reason is not a running train. **F**
- 'A' class stations are found only in Two Aspect signalling arrangement. **T**
- The SM on duty shall see that fog signalman is not kept on duty at Fog signal post for more than 3 hrs at a stretch. **T**
- Block Overlap (BOL) is required to take off Home Signal. **F**

Fill in the blanks: -

- I. Speed of subsequent trains after introduction of Single Line Working is..... **(NORMAL SPEED).**

- II. In exceptional circumstances, the validity of a competency certificate may be extended locally by an officer not below the rank of AOM for a period of**6**.....months.
- III. Calling – on signal shall be provided below stop signal except**LSS**.....
- IV. The Stop Signal controlling the movement of train into the next Block section is ...**LSS**.....
- V. The currency of Green Notice is**3**.....months from the date of issue.
- VI. Tower Wagon may be attached to goods train only by the permission of.....**CHC**.....
- VII. Solid State Interlocking is otherwise known as.....**Electronic**.....interlocking.
- VIII. The weather warning message register should be inspected**by the SS/SM**.
- IX. The details of transaction of Cabin basement/Relay room key is maintained at a station and jointly signed by the...**JE/SE(SIG)**....and....**SM**.....respectively.
- X. The accident report is submitted on form no....**GA-3**.....
- XI. In place of train signal register**Log**....register is maintained on Automatic Block Section.
- XII. The form no.....**T/A-602** or **T/C-912**.....used for Block Ticket.
- XIII. The target time to dispatch ART from base station is....**30**....min by day and**45**....min by night.
- XIV. Fouling Mark is provided to prevent ...**Side Collision**.....
- XV. Passenger warning board shall is placed**1**.....KM in rear of the FSS/IBSS/GSS.
- XVI. Minimum brake power percentage required to clear a load from Road side station is**75%**.....
- XVII. Air pressure specification in engine and brake van of a coaching train is**5Kg/Cm²**... and.... **4.8/4.7Kg/Cm²**.....

State True or False: -

- I. Before piloting in a train,SM will ensure clamping of motor operated facing points only. **F**
- II. Calling-on signal shall show No light in 'ON' position.**T**
- III. The point indicator shows Green if the point is set for main line.**F**
- IV. The Last Stop Signal of C-class station is Home Signal.**T**
- V. Shunting Limit Board may be provided in 'B' class single line stations. **T**
- VI. IBP is controlled by the station in advance.**F**
- VII. Colour light Warner signal provided individually on a post is distinguished by 'P' marker.**T**
- VIII. In Automatic Signalling Territory, placing of detonators in foggy weather may be dispensed with.**T**
- IX. If Co-acting signal is defective the main signal shall also be treated as defective.**T**

Fill in the blanks: -

- a) The adequate distance in Automatic Signalling Territory on double line is...**120m**.....
- b) Normal aspect of a distant signal in a single distant territory is ...**Caution**.....
- c) The Block Overlap at 'A' class station is minimum ...**400**.....mts.
- d) The distance which is kept clear to take 'OFF' Home signal is called ...**SOL**.....

- e) The portion of running line between two block stations on to which no train can enter without line clear is called....**Block Section**.....
- f) The written authority to pass the defective Home signal at a 'C' class station is...**T/369(3b)**.....
- g) BSLB is a board where ...**Block Section**...ends ...**Station Section**..... begins.
- h) The Catch siding point interlocked with ...**FSS**.... Signals.
- i) The normal aspect of IB signal is ...**STOP**.....
- j) The normal aspect of Gate Stop signal is ...**STOP**.....
- k) Derailment comes under ...**D**.... Class of accident.
- l) Breach of Block Rules comes under**G**..... of accident.
- m) Goods Warning Board shall be placed**1.4**.....KM in rear of the FSS/IBSS/GSS.

State True or False: -

- a) The distance between BSLB and Home signal shall not be less than 180mtrs. **T**
- b) Where distant signal is placed at 1km, Passenger Warning Board is not required. **T**
- c) The distant signal is Stop Signal. **F**
- d) If in a Station, Advance Starter is not provided, Starter may be lowered for the purpose of shunting. **F**
- e) The catch siding protects station section. **T**
- f) A coaching train may be admitted in goods loop /goods yard in case of emergency. **T**
- g) When signal overlap is not clear, line clear should not be granted to the rear station. **F**
- h) At a class "B" station the Last Stop signal demarcates end of Station section and commencement of Block section. **T**
- i) The Calling –on signal may be used for the purpose of shunting. **T**
- j) When a red hand signal shown by a railway servant, it supersedes all other signals. **T**

Fill in the blanks: -

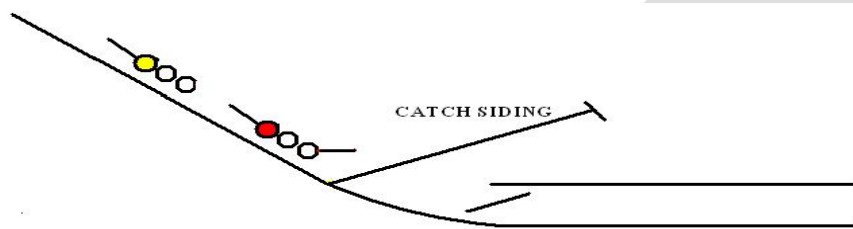
1. During Engine Pushing the speed of train shall be ...**25kmph**....
2. The speed over a station on STD-II(R) interlocked station is ...**upto 110kmph**.....
3. The general speed of shunting is**15kmph**....
4. The sanctioning authority for loading of 'B' Class ODC to Foreign railway is ...**PCOM**.....
5. Authority given to LP to start a train from non signalled line is ...**T/511**....
6. Collision comes under**A**..... class of accident.
7. For ordering of ARME**5**..... Nos. of hooters to be sounded.
8. Under Approved Special instructions, colour light distance signal may be combined with ...**LSS**..... Signal of station in rear.
9. After placing detonator on the rail, the person shall stand at least ...**45**..... Mts. from the detonator.
10. If a train stalls in block section, ...**Block Ticket**.... Authority shall be given to the relief loco to clear the section.
11. The prescribed form of shunting order is ...**T/806**.....
12. If a train enters in Catch Siding, it comes under ...**G**.... Class of accident.
13. The maximum permissible speed of a section is sanctioned by ...**CRS**....

State True or False: -

1. Passenger Warning Board will not be provided for gate signals. **False**
2. The speed of train after passing an automatic stop signal at 'ON' is 15/8 kmph. **False**
3. Block ticket must be collected and pasted with the concerned record foil at the issuing station. **True**
4. Track maintenance machine can work only during day. **False**
5. A Motor Trolley normally shall not work at night. **True**
6. A train stopped in the block section for any reason is not a running train. **F**
7. At stations where both Inner Distant and Distant signals are provided goods warning board s will be dispensed with. **True**

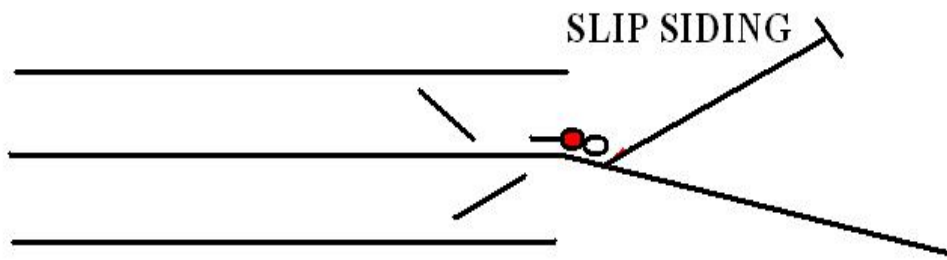
Q.201. Write short notes on Catch Siding and Slip Sidings:

CATCH SIDING:



- It is a safety siding.
- Catch siding is provided where there is a steep falling gradient from block section towards the station section.
- Catch siding protects station section.
- Catch siding provided where the gradient is 1 in 80 or steeper.
- The length of Catch siding is normally equal to the length of a goods train.
- Catch siding interlocked with FSS (otherwise mentioned in SWR).
- The normal setting of point is Catch siding.
- Catch siding should not be used for the purpose of shunting or stabling. It should not be obstructed.
- Before the points leading to the Catch sidings are set for the M/L, it shall be ensured that the train has come to a stop outside the stop signal placed short of the Catch siding.
- It is not necessary to stop the train at the stop signal controlling points leading to Catch siding provided the following conditions are satisfied.
 - ✓ Line clear has been obtained from the Block section ahead.
 - ✓ The train will run through over the M/L.
 - ✓ Gradient of the block section ahead are such that the train can be brought under control easily.
 - ✓ Points is set for the M/L.
 - ✓ Warner/Distant should be kept at ON position.

SLIP SIDING:



- It is a safety siding.
- Slip siding is provided when block section is situated on lower Gradient following station section situated on higher Gradient.
- Slip siding protects Block Section.
- Slip siding provided where the gradient is 1 in 100 or steeper.
- The length of Slip siding is 7 to 8 vehicles.
- Slip siding interlocked with LSS.
- The normal setting of point is Slip siding.
- Slip siding should not be used for the purpose of shunting or stabling. it should not be obstructed.

Q.201(a):- What is fire? Classification of fire? Different types of fire extinguishers commonly used.

In simple words we can say that the fire is the combination of combustible material, oxygen and heat at proportionate rate.

✓ **How can you classify the fire?**

According to the types of fuel and combustible, fire may be classified in following four categories-

- ✓ **Class 'A' fire (Solid):-** These are fires involving combustible materials of organic nature, such as wood, paper, rubber and plastics etc where the cooling effect of water is essential. Class 'A' fire are the most common and the most effective agent is generally water.
- ✓ **Class 'B' fire (Liquid):-** These are fires involving liquids or liquefiable solids. Some flammable liquids are miscible with water and others are immiscible with water. Taking into consideration to the fact extinguishing agent like water spray, foam, water, vaporizing liquids, carbon dioxide and dry chemical powder may be used.
- ✓ **Class 'C' fire (Gas):-** These are fires involving gases or liquefied gases. Foam or dry chemical powder can be used to control these type of fire.
- ✓ **Class 'D' fire (Metal):-** These are fires involving metals. Extinguishing agent containing water are ineffective, and even dangerous. Carbon dioxide and carbonate classes of dry chemical powders may also be hazardous if applied most metal fires. Normally powdered graphite, powdered talc, soda ash, limestone and dry sand are suitable for metal fires.

Q.201(b). How many types of Fire Extinguishers are there and which type of fire extinguisher commonly used in locomotive?

The types of fire extinguishers are mentioned below against each class of fire are generally most suited. In electric locomotive Dry Chemical Powder Type fire extinguisher is used commonly.

- i) **Class A Fires:-** Water expelling type extinguishers.
- ii) **Class B Fires:-** Foam, dry powder, vaporizing liquid, carbon dioxide extinguishers.

- iii) **Class C Fires:-** Dry powder and carbon dioxide extinguishers.
- iv) **Class D Fires:-** Extinguishers designed for expelling special dry chemical powder.

Q.201(c). What are the duties of Running Staff in case of fire?

FIRE ON GOODS TRAIN-

- i) Stop the train immediately and put on flasher light.
- ii) Isolate burning vehicle at a safety distance of 45 meters on either side.
- iii) Save the wagon label card and seal card also the contents of the vehicle.
- iv) Extinguish the fire by any means, which is available near by.
- v) Protect the train as per G.R. 6.03.
- vi) Draw the burning vehicle nearest to the water tank if available.
- vii) If the fire is not controlled advice TPC to switch 'OFF' the OHE power supply and ask for fire brigade if required.

FIRE ON PASSENGER TRAIN –

- i) Stop the train immediately and put 'ON' the flasher light.
- ii) De-train the passengers first and attend to their safety first.
- iii) If there is postal van on the train, every effort shall be made to save the mails.
- iv) Disconnect the electrical couplers and remove fuse links of the batteries if possible.
- v) Isolate the burning vehicle at a distance of 45 meters on either side.
- vi) Protect the train as per G.R 6.03.
- vii) Extinguish the fire by the fire extinguishers available in train or by using other means like sand etc.
- viii) If the fire is out of control ask for fire brigade and inform to TPC/SCR over portable telephone post. If there is a chance of OHE being affected with fire contact TPC and advice him to suppress the tension of OHE.

FIRE ON OHE

Inform the TPC through the nearest emergency telephone tap and also nearest stationmaster about the nature of fire and the amount of damage caused by giving km. Number and between stations.

FIRE 'ON' ELECTRIC LOCO –

- i) Open DJ, lower pantograph, open HBA (Battery switch) and stop the train/loco.
- ii) Try to extinguish the fire with fire extinguishers provided on the loco.
- iii) If the fire is not controlled inform TPC switch 'OFF' the power supply of OHE and ask for fire brigade through emergency telephone.
- iv) Protect in the train/Loco as per G.R. 6.03 if it is in block section.

Q.202. DIFFERENCE BETWEEN “TRANSPORTATION AND OPERATION”.

- ✓ The word transport has its roots in the Latin word “Transporter” Which actually is a combination of two words and means to carry across of from one place to another. So, in other words transportation means to carry mean, live stock and material from one place to another to help achieve optimal utilization of country's resources.
- ✓ Transport' can be regarded as consisting of 3 elements-1) Track over which movement can take place 2)Means of loco, motion and carriage and:3) Arrangements to be made for beginning and ending of journey, collection and distribution, loading and unloading of Tariffs be it freight or passenger in a sage or economic way.

- ✓ But the operation means the process or method of working to achieve the above.

Q.203.PRECAUTIONS WHEN TRAIN IS DETAINED IN SECTION FOR MORE THAN 5 (FIVE) MINUTES DUE TO NO TENSION ON LINE:

- ✓ Whenever any train gets held up for more than 5 minutes in the block section on account of no tension, the Loco Pilot of the train shall depute his Assistant Loco Pilot to check the train in order to look for any abnormality and to advise the guard for no tension on line (in OHE) together with Assistant Loco Pilot the guard shall check the entire train.
- ✓ If in the mean time power supply restored the Loco Pilot shall call back the Assistant Loco Pilot to the locomotive and resume journey.
- ✓ Otherwise after the train is checked the Loco Pilot/Guard inform the section controller/TPC of the details of abnormality if any or otherwise an assistant required to the nearest emergency telephone socket or by other available means.
- ✓ The Loco Pilot and Guards shall arrange protection of line to the affected line in accordance with GR 6.03 in auto section as per GR 9.10.

✓ RULES FOR ELECTRIFIED SECTION

- ✓ In the event of OHE failure, the traction power controlled shall immediately locate the faulty section and isolate the healthy section on adjacent tract on the same route length. As shall also isolate the healthy section on adjacent tract on the same route length. As the faulty section, then he advises the section controller about the same.
- ✓ On receipt of information from TPC, the section controller shall immediately inform the stationmaster, if the station who are concerned with the working of train which healthy OHE temporarily is isolated. They shall not allow any train to leave their stations unless both the drivers guards of the first train have been issued a caution other to proceed at speed of 35 KMPH by day and 20 KMPH by night subjected to observance of other speed restrictions exercising great caution.

Q.204. WHAT ARE THE SAFETY RULES CONCERNED WITH 25 KV AC WORKING ?

- ✓ Do not approach to 25 kv AC directly or indirectly within a radius of 2 meters.
- ✓ On line before going to the roof of the loco take emergency power block first by exchanging private No. With TPC and ground the loco, OHE on both side of loco by earthing poles and cables. After that climb on the roof of the loco.
- ✓ Do not enter in the high-tension compartment of loco until loco is grounded.
- ✓ Do not perform roof inspection in shed, stations or yards until correct isolating switches are opened and grounding switch is closed. Put your personal pad lock on the isolating switch for more personal safety.
- ✓ Do not project part of body above the roof of the loco while changing head light bulb.
- ✓ Do not project jet of water towards OHE.
- ✓ Do not touch any conductor line near the electrified track.
- ✓ Do not throw any conductor on the OHE from over bridge.
- ✓ Do not walk between track and under OHE.

Q.205.DUTY OF LP WHEN HEAD LIGHT DEFECTIVE.

- ✓ In case the engine head light goes out of order after leaving engine or crew changing station, the Loco Pilot shall work the train at night or during thick foggy or tempestuous weather or inside a tunnel cautiously at a speed not exceeding 20 kmph after ensuring the proper glowing of marker lights up to the repairing station and the Loco Pilot shall sound long continuous whistle frequently.
- ✓ The Loco Pilot shall hand over a written memo to the station master of the next station for necessary repair of headlight.

Q.206. DUTY OF LP WHEN DRIVING CAB DEFECTIVE (SR 4.21.01)-

In case of on electric engine, if the leading driving compartment is defective-

- i) The Loco Pilot shall inform the TLC.
- ii) The ALP shall work the train from the trailing cab.
- iii) The Loco Pilot shall remain in leading cab and be responsible for the correct operation of the train.
- iv) Speed not exceeding 40 kmph up to the repairing station or work till such time relief engine is arranged by the TLC in consultation with deputy chief controller.

Q.207. DUTY OF LP WHEN SPEEDOMETER DEFECTIVE.

No locomotive shall be turned out from Shed with deficient or defective speedometer. If it becomes defective enroute, Loco Pilot shall work the train at a speed of 10% less than the permissible speed.

The following formula will help a Loco Pilot to calculate the speed in this regard.

- i) No. of electric mast passed in one minute x 4.3 = -----kmph
- ii)
$$\frac{60 \times 60}{\text{Time taken to cover one km. in seconds}} = \text{-----kmph}$$

Q.208. DUTY OF LP WHEN LEADING CAB HORN NOT SOUNDING (SR 4.21.01)-

- ✓ In case horn/whistle of the driving cab of an engine becomes defective in the section the Loco Pilot will run the train/engine at 40 kmph in day time up to the destination or till the defect is rectified and at night he will only clear the section at a speed not exceeding 40kmph.
- ✓ During run the horn/whistle as prescribed should be sounded by Asstt. Loco Pilot from rear cab.

Q.209. WORKING OF TRAIN WHEN LOCO PILOT INCAPACITED- (G.R.4.20. SR. 4.20.01)

- ✓ If a *driver becomes incapacitate while the engine in motion, the Asstt. Loco Pilot if duly qualified* may work the train up to the next station cautiously and where the Asstt. Loco Pilot is not duly qualified he shall bring the train to a stop and send a message to the station master of the nearest station to make arrangements for a Loco Pilot to take over the train and for so doing he may take assistance of the guard.
- ✓ The speed of the train shall not exceed more than 25 kmph up to the next block station and on arrival at next station the fact shall be reported to the stationmaster.
- ✓ If required train shall be shunted into a suitable line and shall remain under the change of Asst. Loco Pilot till relief arrives.

Q.210. BAD RIDING DUE TO DEFECT IN TRACK (S.R.2.11.01)

a) DUTY OF THE LOCO PILOT WHO EXPERIENCE BAD RIDING-

- i) The Loco Pilot shall note as accurately as possible the KM No. at which bad riding has occurred and he shall also put on the flasher light and put off the head light if it is night time.
- ii) He shall apply train brakes and look back to see the condition of the train behind and after the train comes to a stop, he shall take account of the extent of damage.
- iii) After going through the condition of track if the Loco Pilot thinks that he can pass the spot safely with his train he will proceed pass the spot carefully and then resume normal speed.
- iv) He shall while approaching the next block station, whistle frequently and bring his train to a stop in such a manner that the engine is in front of the station building or the cabin where block instrument is located without clearing fouling mark. Hand over a written memo to the station master or the switch man as the case may be, specifying the exact location as far as practicable and nature of defect noticed. On single line section the driver shall not hand over the authority to proceed till such time he has issued the memo to the station master/ cabin man.
- v) He shall also make a report of the occurrence to the CCC(E) on return to the head quarter.

b) DUTIES OF LOCO PILOT OF SUBSEQUENT TRAIN-

The Loco Pilots of the subsequent trains shall be guided by the caution order issued to them by the station master.

BAD RIDING DUE TO ENGINE DEFECT (SR 2.11.02)-

In such a case the Loco Pilot shall-

- i) Note down the KM. No. and time.
- ii) Stop his train and take account of the extent of damage and proceed cautiously to the next station and report the station master about the fact by giving a written memo.
- iii) Inform Te LC (loco controller) and SCR (section controller) whether any assistance is required or he will be able to continue the journey up to the next repairing station.

Q.211. DUTY OF LP WHEN WHEEL SLIPPING (SR 2.11.03)

- i) In the event of wheel slipping of an engine while on run between stations ensure the safety of track and try to stop wheel slipping as quickly as possible.
- ii) Note carefully the kilometerage and the extent of damage. If required ask for necessary assistance by contacting TLC over telephone.
- iii) Inform the SM of the next block station in writing about the full particulars of the incident.
- iv) In case the track in his opinion is not safe for passage of trains at the normal speed take necessary action, as per action during bad riding (Point 3 & 4) (SR 2.11.01)

Q.212. DUTY OF LP STORMS AND CYCLONE (SR 2.11.04)

In case of a train be caught on the run in a cyclone, storm or strong wind which is likely to an danger the safe running of the train in the opinion of Loco Pilot, he should.

- i) Stop the train at a convenient place avoiding sharp curve, high embankment and bridges.
- ii) LP to avoid jerk while stopping.

- iii) In coaching train ensure that doors and windows of the coaches are kept open by the passengers to allow the free passage of winds through the coaches.
- iv) The train should be restarted in consultation with the guard only after the cyclone, storm or strong wind abates and it is considered safe for the train to proceed.

Q.213.WORKING OF TRAINS DURING FOGGY WEATHER.

DUTIES OF LOCO PILOT:-

When due to thick, foggy or tempestuous weather the visibility is impaired, the Loco Pilot shall regulate the speed of his train to a maximum of **60/75 KMPH** in **Absolute Block** territory. The lower speed limit shall depend upon the visibility condition and the conscience of the Loco Pilot. But in **Automatic Block System** the speed as under-

- i) After passing Automatic stop signal at **GREEN** the speed should not exceed **60/75 KMPH**.
- ii) After passing Automatic stop signal at **DOUBLE YELLOW** the speed should not exceed 30 KMPH.
- iii) After passing Automatic stop signal at **YELLOW** the loco pilot to run at a further restricted speed so as to be prepared to stop at the next signal.

NOTE: Maximum speed may be enhanced to 75 kmph provided that there is fog device in the loco and is subject to the judgement of the loco pilot.

DUTIES OF THE STATION MASTER:-

- In foggy or tempestuous weather, when there is doubt regarding the adequacy of visibility, the SM/ASM shall immediately arrange to put the VTO on the visibility test post and observe it from the nominated place. If the VTO is not visible to him, he will arrange to place detonators to warn the Loco Pilot.
- In thick foggy or tempestuous weather impairing visibility, whenever it is necessary to indicate to the Loco Pilot of an approaching train, the locality of a signal, Two detonators shall be placed on the line, by a railway servant appointed by the Station Master in this behalf about 10 meters apart and at least 270m outside the First Stop Signal.
- No shunting should be carried out on non-isolated lines after granting line clear to an approaching train.

Where not necessary to place detonators:

It is not necessary to place detonators to indicate 'location of a Stop signal' to the Loco Pilot in following circumstances:

- ✓ In sections where a reliable **FOG SAFE DEVICE** has been provided on Locomotives.
- ✓ At stations where double distant signals are provided.
- ✓ Where maximum speed allowed in the station section is upto 15 Kmph even at stations where pre-warning signal is not available, but a warning board exists.
- ✓ Where speed of the section is less than 50 kmph (but more than 15) and the first signal of a station is not a stop signal.
- ✓ In Automatic Signalling territory.
- ✓ On gate signal.
- ✓ On departure signal.
- ✓ At the site (s) of Temporary speed restriction imposed due to maintenance of Track/OHE/Signal.

Q.214. Duties of LP/ALP in case of train dividing (GR-6.09):-

- ✓ LP/ALP experiences that engine is unable to haul the load, stop the train and if possible clear bridges, tunnels etc.
- ✓ LP/ALP shall sound four short whistles to alarm the Guard.
- ✓ Observe the Red Hand Signal up & down shown by the Guard.
- ✓ LP/ALP shall acknowledge the Guard with Red Signal as well as prescribed whistle code.
- ✓ Ensure LP/ALP to place detonators & also protect the train by means of securing.
- ✓ Divide the load as per the hauling capacity of the loco.
- ✓ Obtain written permission from Guard in the prescribed form (T/609) to clear 1st portion from section.
- ✓ Ensure last vehicle indicator shall not be provided in the last vehicle, while clearing the 1st portion from section and LV no. mentioned in the written permission.
- ✓ On single line, where Token working will be in force, the LP/ALP shall hand over the token to Guard.
- ✓ LP/ALP shall give one long one short one long one short whistle to inform SM/CM approaching station.
- ✓ LP/ALP shall stop the train without clearing FM and obtain acknowledgement from SM/CM.
- ✓ If 2nd portion clears with same loco with same LP than proceed with same authority, while returning with load the train may be admitted by taking off reception signal.

Q.215. Duties of LP/ALP in case of Fire:-

- ✓ As soon as the LP/ALP notices fire in his train, he will first stop his train.
- ✓ As far as possible train shall be controlled near available water sources and clear the bridges, tunnels and steeper gradients etc.
- ✓ He will inform the guard about the fact.
- ✓ Note down exact kms. ,wagon no. and position of wagon from engine/breakvan.
- ✓ Affected vehicle should be isolated immediately for a distance of 45m.
- ✓ Every effort should be made to extinguish the fire and to save the wagon labels, seals and contents of the wagon.
- ✓ If electrical fire is caught then use Earth or sand, if available.
- ✓ In case of fire in a passenger train, the safety of passenger shall be taken care first.
- ✓ In case of postal van, every effort shall be made to save the mails.
- ✓ In an electrically fitted carriage, if wood work catches fire due to short circuit, the electric coupler at both ends shall be disconnected and remove battery fuse.
- ✓ The fire extinguishers available in train/engine shall be used as per circumstances.
- ✓ In case of fire in any electrified section, immediately inform TPC/SM.
- ✓ Record all events in chronological order in LP diary/T-34 HF.

Q.216. Duties of LP/ALP in case of Hot Axle:-

- ✓ Hot Axle noticed in running train then LP/ALP shall control the train.
- ✓ Advise Guard accordingly.
- ✓ Note down exact kms., wagon no. and position of wagon from engine/breakvan.
- ✓ Jointly check the condition of Hot Axle.
- ✓ In case of burning with flame, efforts shall be made to extinguish.

- ✓ If Hot Axle is not so serious, proceed to the next station cautiously and inform SM and TXR in writing.
- ✓ Train shall be admitted on main line and indirect reception will be done in case of loop line.
- ✓ If Hot Axle is serious, inform to SCR through portable telephone for further action.
- ✓ Necessary remarks shall be recorded in Rough Journal and T34 HF.

Q.217. Duties of LP/ALP in case of Alarm Chain Pulling (ACP) :-

- ✓ On noticing the fall of Air Pressure/Vacuum in the guage, immediately stop the train and if possible clear bridges, tunnels & gradients etc .
- ✓ The LP/ALP shall sound prescribed whistle code i.e. two short one long (o o -).
- ✓ The whistle code shall be repeated till the guard acknowledges it by showing Red Hand Signal.
- ✓ Immediately after stopping of the train, the Guard will proceed from left side and the ALP from the right side to take the following particulars:-
 - (a) Km and time,
 - (b) Coach number,
 - (c) Owing Railway & type,
 - (d) Position of coach from loco and SLR,
 - (e) Name of the passenger who has pulled the chain, reason if available.
- ✓ After collecting all particulars, the ACP to be reset by turning of the disc from vertical position to the horizontal position.
- ✓ Report should also be made to SCR and remarks should be given to the relevant papers.

Q.218. Duties of LP/ALP during Accident (AM 3.02 & 3.02.01):-

Immediately after occurrence of an accident, the LP/ALP must:-

- Switch on the flasher light.
- Note down exact time and Kms.
- Protect the adjacent line at front side and guard will protect in rear as per GR 6.03 & 9.10.
- In case guard is injured, the duties of guard shall be performed by LP/ALP.
- Take such precautions as may be necessary.
- Render all possible assistance to Guard in relief measures to the injured and particularly in the assessment of damage of Rolling stock, P/Way, Locomotive, OHE and nature of assistance.
- Refer all the duties of Guard in case of accident mentioned in this book.

Q.219. Duties of ALP in the event of serious Accident (AM 3.02.01):-

- ✓ Assist the Guard/LP in conveying message of Accident to all concerned.
- ✓ Help the LP in protection of site of the accident.
- ✓ Render all possible assistance to the Guard in relief measures to the injured persons.
- ✓ Carry out any other jobs assigned to him relating to the accident by the LP of the train.
- ✓ He should man the engine in absence of LP.
- ✓ Refer all the duties of Guard in case of accident mentioned in this book

Q.220. Duties of LP/ALP in securing of vehicles at station (G.R. 5.23):-

- ✓ LP/ALP must ensure that his train is standing after clearing the Fouling Mark.

- ✓ If the engine is detached or remain on load in shut down condition with the train, then,
 - If no. of wagons/vehicles is 12 or less than 12; hand brakes of all wagons must be pinned down/tightened by incoming Guard and ALP.
 - If no. of wagons/vehicles is more than 12; the incoming ALP and Guard must pin down the hand brakes of 6 wagons from each front and rear side respectively.
- ✓ LP/ALP shall apply the train brake and hand brake of the engine and must put wooden wedges, available in the engine, under the wheels of the engine.
- ✓ At least four sprags/wooden wedges be used, two each below the outermost pair of wheels at either end.
- ✓ The vehicles of stabled load/train should be coupled together. In case the stabled load has to be split for any reason, each such split part should be treated as a separate load for the purpose of securing.
- ✓ In case of coaching train, the LP will apply Air/Vacuum brake effectively and must ensure that the station staff has put skids at both ends of the rake.
- ✓ Finally LP/ALP and Guard will prepare a written memo jointly certifying the securing of wagons and hand over to SM, who will give a diary entry in which all securing particulars are written.

Q.221. Duties of LP/ALP during Train Parting

(GR- 6.08 & 6.09 and S.R.6.09.01):-

- ✓ If the LP of a train notices that his train has been parted, he shall sound the prescribed whistle code for the same i.e. one long one short one long one short (– o – o) to appraise the Guard and will keep the front portion in motion till rear portion stops.
- ✓ The Guard will show Green flag by day and white light by night up & down vertically till such time rear portion stops.
- ✓ The Guard will then apply the hand brake to stop the rear portion in order to prevent collision with the front portion.
- ✓ The LP of banking engine (if any) shall bring the rear portion to a stand and sound one long one short one long one short (– o – o) whistle to attract the attention of the LP of the front portion.
- ✓ As soon as the rear portion stops, the Guard shall immediately protect the rear portion and will secure the vehicles by applying the brakes.
- ✓ If both the portion of the train has come to a stand within sight of each other and if it is possible and safe to couple then the Guard shall exhibit hand signal to the LP to couple the train with a great caution.
- ✓ If the first portion of the train proceeded without stopping, then –
 - The LP will warn the SM of the station in advance by sounding one long one short one long one short (– o – o) whistle.
 - Guard will protect both rear and front portion of the train left in the section.
 - The LP will not hand over the tangible authority to proceed, if any, till the clearance of the block section.
 - If there is a banking engine in the rear of the train, the LP of the banking engine shall arrange to protect the rear and the Guard will protect the front portion.
- ✓ The LP shall proceed with front portion to the next station and shall immediately inform the SM that a portion of the train has been left in the block section.
- ✓ The LP shall return with the engine alone on the authority of T/409 to pick up the rear portion observing all cautions and signals shown by the Guard.

- ✓ The broken knuckle, if any, must be loaded on B/Van and deposited at the next station.
- ✓ All particulars of train parting and detention in the section must be mentioned by the Guard in his Rough Journal, T34 HF and memo, which is to be given to the SM of the next station.

Q.222. What are the guidelines for working of TT Machine?

- The heavy duty on Track Tie Tamper machine has been specially designed for packing of ballast, travelling and lining the track during maintenance as well as track renewal.
- 4 or 8 wheelers self propelled or non self propelled vehicle.
- Shall be considered as train.
- Can run both by day and night.
- Max speed-40kmph, over Points and crossings-15 kmph.
- Treated as a train and shall run as per system of working.
- Will work under the supervision of an engineering official not below the rank of JE(P-WAY).

Working:

- Camping coaches with engine if needs to move from one station to other – **Allowed as per the System in vogue.**
- While working in the Block section between two stations:
 - ✓ The operator/SSE/JE (P-way) to inform SM in writing with all details, such as type, number, sequence, work, whether return or proceed, time.
 - ✓ SM to obtain permission of Control.
 - ✓ SMs will exchange messages supported by private number.
 - ✓ Machines will be allowed in the block section on Line clear or Blocked forward or blocked back.
 - ✓ SM will use button/lever collars, set point against block line and make entry in TSR & SM diary in red ink.
 - ✓ Last machine will affix LVI & manned by SSE/JE (P-way)/site in charge.
 - ✓ Single authority in prescribed form T/465- for working or for shifting from one station to another.
 - ✓ **Any number of machines** can be allowed in the section with the permission of SCR.
 - ✓ The Block Permit/ATP (T/465) to be handed over to SSE (P-Way) in charge. He will obtain signature of all SSE/JE/TMO.
 - ✓ This authority will be the authority for all machines to enter into the block section.
 - ✓ T/465 shall also be issued for dispatch from non-signalled line.
 - ✓ Alteration of point & TES report after getting written assurance from Competent Railway Servant of Engg dept.
- **Admission of train after completion of work:**
 - ✓ **On right direction-** By taking off reception signals.
 - ✓ Competent Rly Servant will display green hand signal from FSS till last machine enters.
 - ✓ All trains to be admitted on same line.
 - ✓ **On wrong line (D/L) :** With T/509 (to SSE in charge), Competent Rly Servant to travel in first engine.
 - ✓ Intact arrival will be certified by SSE/JE (P-way) in charge in prescribed format.
 - ✓ T/465 to be returned.
 - ✓ The SM will alter the route. Exchange messages supported by P/No.
- **While moving from one station to another without work:**

- ✓ One or more coupled machines – On line clear as per system of working.
- ✓ Group of machines following each other: By taking short duration block (10 minutes more than running time)
- ✓ Safety distance- 200m.
- ✓ Authority-T/465.
- **Working on Automatic Signalling Section:**
- ✓ Auto working to be suspended under exchange of messages with P/Nos after ensuring clearance of section.
- ✓ Working same as above in 22.2 a & b.
- ✓ Normal working will be resumed on completion of work under exchange of messages with P/Nos.
- ✓ Should not work during TIC.

RAJBHASHA

Q1. When Hindi Day observed?

Hindi day observed every year on 14th September.

Q2. In which year Hindi accepted as the Official Language?

On 14th September 1949 Hindi accepted as the Official Language.

Q3. How many Articles are there in the Constitution on official Language?

There are 09 Articles (343 to 351) in our constitution about official language.

Q4. Write short note on Official Language policy?

- a) Policy made to increase the use Hindi in place of English.
- b) Accept Hindi as official language and English as associate official language.
- c) To promote Hindi, training of Hindi should be imparted free of cost.
- d) Incentives to be granted to promote Hindi.
- e) Plans should made to promote Hindi in Administration in place of English.

Q5. What are the courses-examination are conducted in railways?

- a. Prabodh :- Primary, for employees in south India only.
- b. Praveen :- Middle, for employees of all region.
- c. Pragya :- Matric, for employees of all region.

Q6. In which script Hindi is written?

Hindi is written in **Devanagri script**.

Q7. What is the importance of section 3.3 as per official language Act?

- a) Compulsory use of Hindi and English in bilingually in the specified 14 documents
- b) Hindi shall be used before and above English
- c) Hindi shall be written on big font size and bold letters
- d) issuing authority shall be responsible to ensure the use of Hindi
- e) the terms used in Hindi shall be simple and accept the use of technical English word in Hindi
- f) Propagate Hindi through these documents.

The specified important documents are;

1. General orders, 2. Resolution, 3. Rules, Rubber stamp & Name plates
4. Press- Communiqués, 5. Notices, 6. Form of Tender, 7. Contract, 8. Agreement
9. License, 10. Permit, 11. Notification, 12. Parliament official papers, 13. Parliament official reports. 14. Administrative reports.

Q8. According to official languages rules, how the states are divided, mention states of each region?

According to official languages rules 1976, All states & UTs are divided in 03 regions i.e. A, B & C

“A” Region means Fully Hindi speaking areas :- U.P., M.P., Bihar, Jharkhand, Delhi, Rajasthan, Haryana, Uttarakhand, Chhattisgarh, Andaman and Nicobar islands.

“B” Region means Semi- Hindi speaking areas:- Punjab, Gujarat, Maharashtra, and Chandigarh.

“C” Region means Non- Hindi speaking areas :- West Bangal, Andra Pradesh, Odisha, Assam, Kerala, Karnataka, J&K etc.

The official language rules are applicable to whole India except Tamilnadu.

Q9.- What is eight schedule of the constitution?

Eight schedule of the constitution is about the indian languages. At present, there are 22 languages in this schedule. They are –Sanskrit, Hindi, Urdu, Assamese, Bangla, Oriya, Telugu, Tamil, Kannad, Malayalam, Marathi, Gujrati, Panjabi, Kashmiri, Sindhi, Nepalese, Konkani, Manipuri, Dogri, Maithili, Santhali and Bodo.

Q10.- What are the Rajbhasha Incentive Scheme?

Rajbhasha Incentive schemes have been introduced to promote the use of Hindi. Two types of incentives are admissible as follows-

i) **Monetary Incentives:-**

- Cash awards are given on passing Hindi Exams. For writing books in Hindi – Indira Gandhi award, Lal Bahadur Shashtri award, Prem Chand award, Maithili Sharan Gupta award etc. are given.

ii) **Non-monetary Incentives:-**

-Free Hindi Library facility, Hindi Books, dictionary, glossary etc. and Hindi Workshop training and other helping literature etc.

Q11.- How you will promote Hindi at your work place?

Ans:-

- a. make your signature in Hindi
- b. wear name badge in Hindi
- c. paste name slips in Hindi on your rule books
- d. apply leave applications in Hindi
- e. convey messages in Hindi
- f. daily write thoughts in Hindi at your work place.
- g. make habit to communicate in Hindi with your co-workers
- h. render free service in Hindi library
- i. participate in Hindi essay, songs and cultural functions.
- j. celebrate Hindi Diwas at your work place.
- k. encourage your co workers to give Hindi exams.
- l. recommend your supervisor to award the staff working in Hindi.

Official Language Policy - Constitutional Provisions:

On 14th September 1949 Hindi was accepted as Official Language of the Union by the Constitutional Assembly to include in the Constitution of India, which was promulgated on 26th January 1950. We celebrate Hindi Day (Hindi Divas) on 14th September, every year. Provisions regarding Official Language are contained in Article 120(1), 210(1) and 343 to 351 of the constitution.

Article 120(1): Business in Parliament shall be transacted in Hindi or in English.

Article 210(1): Business in the Legislature of a state shall be transacted in the Official Language or Languages of the state or in Hindi or in English.

Article 343(1): The Official Language of the Union shall be Hindi in Devnagari Script. 2) The form of numerals to be used for the official purposes of the union shall be the international form of Indian numerals.

Article 343(2): For the period of 15 years from the commencement of the constitution, English Language shall continue to be used.

Article 343(3): Parliament may by law provide for the use of the English after 15 years.

Article 344 : The President shall constitute a commission after five years from the Commencement of the constitution and thereafter ten years.

The duty of the commission shall be to make recommendations to the President as to: -

- (a) The progressive use of the Hindi Language for the Official purposes of the Union.
- (b) Restrictions on the use of English Language for all or any of the Official purposes of the Union.
- (c) Language for communication between Union and State or between One State and another.

There shall be constitutional committee consisting of thirty members of whom twenty shall be from Lok Sabha and ten from the Rajya Sabha. It shall be the duty of the Parliamentary Committee to examine the recommendations of the commission so constituted.

Article 345: The Legislature of states by law can adopt one or more languages as:
(1) Official Language or Languages of the state.

Article 346: Official Language for communication between one state and the Union.

Article 347: Provides for special provision relating to language spoken by a Section of the population of a state.

Article 348: Deals with Languages to be used in the Supreme Court and in the High Courts and Acts, Bills etc. The authoritative of bills Act, ordinances, orders regulations and byelaws issued under the constitution shall be in English language.

Article 349: No bill to be introduced for amendment of the language unless President gives sanction. After considering the recommendation of the commission and the committee constituted for the purpose.

Article 350: Deals with Language to be used in representation for redressal of Grievances.

Article 351: Deals with Directive for development of Hindi Language to promote the spread of the Hindi Language to develop it so that it may serve as a medium of expression for the composite culture of India to secure its Enrichment by assimilating without interfering with its genuine forms, style and expression used in Hindustani and other languages of India.

SCHEDULE VIII – LANGUAGES (Article 344(i) & 351)

The following languages are accepted in the constitution as Official Language for the Union and States:

1 Assamese	2 Oriya	3 Urdu	4 Kannada	5 Kashmiri
6 Gujarati	7 Tamil	8 Telugu	9 Punjabi	10 Bengali
11 Marathi	12 Malayalam	13 Sanskrit	14 Sindhi	15 Hindi
16 Nepali	17 Manipuri	18 Konkani	19 Bodo	20 Santhali
21 Maithali	22 Dogari			

THE OFFICIAL LANGUAGE ACT 1963 - AMENDED IN 1967

Section 3(1) deals with the continuation of English language in addition to Hindi for Official purposes of the union and for use in parliament.

Section 3(2) deals with the provision of Hindi or English language used for the purpose of communication between Ministry or Department or Office of Central Government and any corporation or company owned or controlled by Central Govt. Translation of such communication in Hindi or English shall be provided till such date as the staff concerned, Ministry, Department, Office or corporation or company have acquired working knowledge of Hindi.

Section 3(3) deals with the provision of both Hindi and English languages shall be used for Resolutions, General Orders, Rules, Notifications, Administrative or other reports of Press Communications, Contracts and agreements executed and licenses, permits, notices and forms of tender issued by the offices.

Section 3 states that the Central Government may by notification in the official gazette make rules for carrying out the purpose of this Act.

Resolution 1968: Intensive and Comprehensive programme should be prepared and implemented by the Government of India for accelerating the spread and development of Hindi in collaboration with the State Government.

SALIENT FEATURES OF OFFICIAL LANGUAGES RULES 1976 (AS AMENDED 1987)

In exercise of the powers conferred by Section 8 of the Official Language Act, 1963, the Central Government has made the following rules. With a view to implement the Official Language Policy, regions namely 'A', 'B' & 'C' have been constituted in the country.

"A" Region - Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Rajasthan and Uttar Pradesh, Jharkhand, Uttarakhand, and Chhattisgarh, Delhi and Andaman & Nicobar.

"B" Region - Gujarat, Maharashtra, Punjab & Union Territory Chandigarh, Daman & Diu and Dadar & Nagar Haveli.

"C" Region - States and Union Territories other than those referred to in A & B Regions.

Rule-1 deals with the title and **Rule-2** regarding the definitions of words such as Act "Employee", Notified office of proficiency" etc. used in the rules.

- Communications to states etc. other than Central Govt. offices- Communications from Central Govt. Offices to states and Union territories in A & B region is normally in Hindi. For states, Union territories in the region 'C' shall be in English (Office includes individual also).
- Communication between Central Govt. offices situated in 'A' shall be in Hindi and for offices situated in 'B' & 'C' may be in Hindi & English or in such proportion determined from time to time.

5. Replies to communications received in Hindi - Replies to communications in Hindi shall be in Hindi.
6. Use of both Hindi & English for documents referred in Section 3(3) of 1963 Act. Both Hindi & English to be used for documents such as Resolutions, General Orders, Rules, Notifications, Administrative or other reports, press communiqués, Contracts, agreements and licenses, permits, notices and forms of tender issued by the offices.
7. Applications, Representations - Employee may submit an application, appeal or representation in Hindi or in English.
8. Noting - An employee may record a note or minute on file in Hindi or in English without being himself required to furnish a translation there-of in the other Language.
9. Proficiency in Hindi - Matriculation or any equivalent or higher examination with Hindi as the medium of instruction or Hindi as an elective subject in degree.
10. Working knowledge of Hindi - Metric with Hindi as one of the subject i.e., Its language or Pragma pass or declaring himself having working knowledge in Hindi.
11. Manuals, Codes, other procedural literature Article of Stationary, Forms & Headings, Stations written printed or shall be in Hindi & English.
12. Responsibility for compliance -
 - (1) Ensure implementation of the provision of the Act.
 - (2) Devise suitable and effective checks points.
 - (3) Issue of Directions from time to time.

Various Incentives/Award Schemes for Rajbhasha Hindi

Railway Board's Individual Cash Award Scheme

Every year 135 officers/employees are awarded for doing commendable & maximum work in Hindi by Railway Board at All India Hindi Week Celebrations. These awards are given by the Railway Minister. Every award gets ₹1500/- in cash and a certificate.

General Manager's Individual Cash Award Scheme

Every year on the eve of South Eastern Railway's Hindi Saptah Celebrations 10 officers/employees are awarded for doing commendable and maximum official work in Hindi. These awards are given by General Manager.

Home Ministry's award Scheme

The particulars of the scheme are as follow: -

1. All officers and employees working in South Eastern Railway can participate in the Competition under this scheme.
2. Officers/employees working in regions: - 'A' , 'B' for writing minimum 20,000 words & in "C" for writing minimum 10,000 words in Hindi per year.

Awards to be given

For Ministry/Dept/Attached Office			For Subordinate Office		
First prize	2 Awards	₹ 2000/-each	First prizes	2 Awards	₹ 1600/each
Second prize	3 Awards	₹ 1200/- each	Second prize	3 Awards	₹ 800/each
Third prize	5 Awards	₹ 600/- each	Third prize	5 Awards	₹ 600/each

(Authority: DD/OL/MORly/NDLS L.No.Hindi -2013/ १./7/7 Dtd 28/01/2013.)

Note: Under this scheme minimum 10 participants should be there from any Unit/Section/Office.

Collective Cash Award Scheme

Under the scheme 3 departments are awarded for doing commendable and maximum work in Hindi.

Particulars of the award

First Prizes	(1)	:	₹ 9,000/-
Second Prizes	(1)	:	₹ 7,000/-
Third Prizes	(1)	:	₹ 5,000/-

Award for writing original Hindi books on Economic subjects

First Prizes	(1)	:	₹ 50,000/-
Second Prizes	(1)	:	₹ 40,000/-
Third Prizes	(1)	:	₹ 30,000/-

Apart from this copies of the awarded books are purchased for the Railway Hindi Libraries.

(Authority: Dy.Dir(Raj)/MORly/NDLS L.No. Hindi-2009/ग.-7/9 Dtd 02.03.2010)

Award for writing original Hindi books on Technical subjects

Every year following 7 Cash awards are distributed by Railway Board to such of genius Railway men who write original Hindi books on technical subject: -

First Prizes	(1):	₹ 15,000/-
Second Prizes	(2):	₹ 8,000/-each
Third Prizes	(2):	₹ 5,000/-each
Consolation prizes	(2):	₹ 2,500/-each

Apart from this, copies of the awarded books are purchased for the Railway Hindi Libraries.

Rajeev Gandhi Gyana-Vignayan Award for writing original books on Technical/Science Subject.

First Prize	:	₹ 2 lakh with Certificate & memento
Second Prize	:	₹ 1.25 lakh with Certificate & memento
Third Prize	:	₹ 75,000/- with Certificate & memento
Consolation Prizes(10):	:	₹ 10,000/-each with memento

(Authority: Dy.Dir(Raj)/MORly/NDLS L.No. Hindi-2009/ग.-7/9 Dtd 13.05.2010)

Indira Gandhi Rajbhasha Award Scheme

Every year following 3 awards is distributed to the writers of the best Hindi Books on Official working:

First Prize	:	₹ 60,000/- with memento
Second Prize	:	₹ 45,000/- with memento
Third Prize	:	₹ 30,000/- with memento
Consolation Prizes	:	₹ 15,000/-each with memento

(Authority: Dir(Policy)/MOH/NDLS L.No. 14011/01/2014/OL(Policy) Dtd 07.05.2014)

Cash award scheme for writing story, novel and poetry in Hindi 1. Premchand Award Scheme

Every year Premchand award is given to the best story book or a novel in Hindi.

First Prize	:	₹ 15,000/-
Second Prize	:	₹ 7,000/-
Third Prize	:	₹ 3,300/-

2. Maithilisharan Gupta Award

Every year Maithilisharan Gupta award is given for best poetry book in Hindi.

First Prize	:	₹ 15,000/-
Second Prize	:	₹ 7,000/-
Third Prize	:	₹ 3,300/-

3. Railway Minister Hindi Essay Competition

For writing best essays pertaining to Railway subject following awards are distributed:-

First prize : ₹3,000/-

Second prize : ₹2,000/-

Competition is held in January

(Authority: Dy.Dir(Raj)/MORly/NDLS L.No. Hindi-2014/Trg.-7/1 Dtd 04.02.2014)

Training - Incentives regarding Hindi/Hindi Typing/Hindi Stenography training (Only for those officers/employees who do not possess working knowledge of Hindi.)

The officers/employees of Group 'A', 'B' and 'C' who pass the above examinations conducted under the Hindi Teaching Scheme with creditable marks are awarded in the following manner.

On passing Prabodh/Praveen/Pragya/Hindi Typing/Stenography examination under the Hindi Teaching Scheme by own efforts the officers and employees are awarded in the following way: -

Cash Award

Having secured

70% or more Marks

60% or more Marks

55% or more Marks

Lump sum Award

Prabodh

₹1600/-

₹800/-

₹400/-

₹1,600/-

Praveen

₹1800/-

₹1200/-

₹600/-

₹1,500/-

Pragya

₹2400/-

₹1600/-

₹800/-

₹2,400/-

In addition personal pay equal in amount to one increment for 12 months.

For passing Hindi Typing Examinations For passing Hindi Stenography Examinations

Having secured	97% or more	95-97%	90-95%	95% or more	92-95%
88-92% Typing	₹ 2400	1600	₹800	Stenography ₹2400	₹ 1600 ₹800

Lump sum Award for Hindi Typing : 1,600/- ; Hindi Stenography : ₹3,000/-

Typewriting

In addition, personal pay equal in amount to one increment for 12 months.

Stenography

In addition, Stenographers whose mother tongue is not Hindi are given personal pay equal in amount to two increments for the first 12 months and one for the next 12 months on passing Hindi Stenography examination.

(Authority: Dir./MOH/Dept. of OL/NDLS L.No.21034/66/2010-OL(Trg.) dtd 29/07/2011 received under

Dy.Dir(Raj)/MORly/ NDLS L.No. Hindi-2011/१.10/11 Dtd 04/10/2011

Honorarium to the Typists ₹ 80/- and Stenographers ₹ 120/- for doing day to day official work in Hindi

Hindi Essay, Elocution, Noting and Drafting Competitions

Hindi Essay, Elocution, Noting and Drafting competitions are conducted at Zonal & Railway Board level and the Hindi Typewriting competition is conducted only at Zonal level. All those competitions are conducted once in a year.

Awards are given in the following manner

For Hindi Essay, Elocution and Noting and Drafting competition:

Prizes	Zonal Level	Rly.Board level	Hindi	Yatra	Vritant
First prize	2000/-	3000/-		4000/-	
Second prize	1600/-	2500/-		3000/-	
Third prize	1400/-	2000/-		2000/-	
Consolation prize	800/-	1500/-			
	(3 prizes)	(5 prizes)			
When competition is held July		August		(to be sent in Feb to Rly)	

(Authority: Dy.Dir(Raj)/MORly/NDLS L.No. Hindi-2013/प्र./-21/8 Dtd 24.01.2013)

Incentive allowance to Typists and Stenographers

English Typist and English Stenographers are allowed on certain conditions incentive allowance of 80/- and 120/- per month respectively for doing Hindi Typing and Hindi Stenography work.

Incentive Scheme for officers giving dictation in Hindi

All the officers who have been provided Stenographic assistance and who generally give dictation, can participate in this scheme. Hindi speaking officers for giving dictation in Hindi for a minimum of 20,000 words in a calendar year. NonHindi speaking officers for giving dictation in Hindi for a minimum of 10,000 words per calendar year. Amount of award 2000/- for each officer. Two awards for each office.

Note: The officers/employees working in Hindi organisation will not be eligible to participate in any of the above competitions.

(Authority: DD/Railway Board/NDLS L.No Hindi -2013/प्र./7/8 dtd 30.01.2013)

Dir(Tech/Policy)/MOH/NDLS L.No.II/12013/01/2011

List of documents coming under Section 3(3)

- | | | |
|-------------------------------------|------------------|---|
| 1. *General Orders | 2. Notifications | 3. Agreements |
| 4. Licenses | 5. Permits | 6. Tender Form & Tender Notices |
| 7. Resolutions | 8. Rules | 9. Documents/Papers presented in Parliament |
| 10. Administrative & Other Reports. | | |

(*) General Orders include:

1. All orders, decisions or instructions intended for departmental use and which are of standing nature.
2. All orders, instructions, memoranda, notices etc. relating to or intended for group or groups of Government employees.
3. All circulars whether intended for departmental use or for Government employees.

For Officers

Kamalapthi Tripathi Rajbhasha Gold Medal- to above SAG Grade Officer for Outstanding Contribution towards Rajbhasha Implementation in Zonal Railway/ Production/ Workshop Units.

Rail Mantri Rajbhasha Bronze Medal - to SAG Grade Officer for Outstanding Contribution towards Rajbhasha Implementation in Zonal Railway/Production/ Workshop Units.

(Authority: Executive Dir(IR)/MORly/NDLS L.No. Hindi-2013/प्र.-7.-7/6 Dtd 17.02.2014)

Various signals and boards and their distances

Sl. No.	Board/Signal	From	TO	Distance
1	Outer(D/L)	Outer	Home	400 M (Min.)
2	Outer(S/L)	Outer	SLB/Adv. Starter (Oposit Direction)	400 M (Min.)
3	Outer(S/L)	Outer	Outer Most Facing Point (If SLB/ADV. Str./Home) Not Provided	580 M (Min.)
4	Home Signal (D/L)	Home	BSLB/Outer Most Facing Point	180 M (Min.)
5	Home Signal (S/L)	Home	SLB/Adv. Starter (Oposit Direction)	180 M (Min.)
6	Home Signal (S/L)(MLQ/MOMA)	Home	Outer Most Facing Point (If SLB/ADV. Str.) Not Provided	300 M (Min.)
7		Distant	Home	1 KM (Min.)
8		Distant	Inner Distant	1 KM (Min.)
9		Distant	Home (In Double Distant Territory)	2 KM (Min.)
10		Warner	FSS(HOME)	400 M (Min.)
11	GSS (Two Aspect)	Gate Stop Signal	Level Crossing	400 M (Min.)
12	GSS(MLQ/Multi aspect)	Gate Stop Signal	Level Crossing	180 M (Min.)
13	Adv.Starter(S/L)	Outer Most Trailling Point	Advance Starter (Two Aspect)	180 M (Min.)
14	Adv.Starter(S/L)	Outer Most Trailling Point	Advance Starter (MLQ/MOMA)	120 M (Min.)
15	Strater(D/L MLQ/MOMA)	Starter	Advance Starter	120 M (Min.)
16	Strater(D/L Two aspect)	Starter	Advance Starter	180 M (Min.)

17	Adv.Starter/SLB (S/L Two Aspect)	Outer Most Trailing Point	SLB	180 M (Min.)
18	Adv.Starter/SLB (S/L MLQ/MOMA)	Outer Most Trailing Point	SLB	120 M (Min.)
19	VTO (Two Aspect)	Centre of Station Building	VTO	300 M (Min.)
20	VTO (MACL)	Centre of Station Building	VTO	180 M (Min.)
21	FSP	First Stop Signal	FSP	270 M
22	Caution indicator board	Place of Restriction	Caution Indicator Board	1200 M
23	Caution indicator board	Outlying Siding Point	Caution Indicator Board	830 M
24	S' Marker board	Outlying Siding Point	S' Marker Board	30 M
25	Caution indicator board	S' Marker Board	Caution Indicator Board	800 M
26	Speed indicator board	Speed Indicator Board	Place of Restriction	30 M
27	Speed indicator board	Speed Indicator Board	Caution Indicator Board	1170 M
28	STOP INDICATOR BOARD	Place of Restriction	Stop Indicator Board	30 M
29	W BOARD	Curve or Tunnel	W' Board	800 M
30	W/L BOARD	All level Crossing Manned/Unmanned	W/L Board	600 M
31	RW/L Board	Only Unmanned L/C	R/WL Board	250 M
32	Passenger Warning Board	Passenger Warning Board	FSS/GSS/IBSS	1 KM (Min.)
33	Goods Warning Board	Goods Warning Board	FSS/GSS/IBSS	1.4 KM

34	T/P Board	Point of Obstruction	T/P Board	550 M/Length of Longest Passenger Train
35	T/G Board	Point of Obstruction	T/G Board	700 M/Length of Longest Goods Train
36	Sigma Board	Stop Signal	Sigma Board	At least 3 OHE Mast
37	Neutral Section Board	First Warning Board	Neutral Section	500 M (Min.)
38	Neutral Section Board	Second Warning Board	Neutral Section	250 M(Min.)
39	PH Board	PH Marker Post	Centre Of Station	400 M (Min.)
40	Fouling Mark (Existing)	Centre of Track	Centre of Track	4.265 M
41	Fouling Mark (New Work))	Centre of Track	Centre of Track	5.30 M
42	Detonator(Safety Radius)	Point of Placement	Person	45 M
43	OHE(Safety Radius)	Contact Wire	Person	2 M
44	C Board	Vulnerable Location	C' Board	1200 M
45	T Board	Vulnerable Location	T' Board	Length of Longest train in the section
46	Broad Guage	Track	Track	1676 MM (5'6")
47	Meter Guage	Track	Track	1000 MM (3'3")
48	Narrow Guage	Track	Track	762 MM (2'6")
49	Height Guage of L/C Gate	OHE	Rail Level	5.270 MM(Min.)
50	Maximum Height above RL	Rail Level	CBC Coupler/Centre of Buffers	1105 Mtr.

VARIOUS OPERATING FORMS: (Written Authorities)

Sl No.	FORM No.	DESCRIPTIONS
1	T/351	<ol style="list-style-type: none"> 1. Disconnection/Reconnection Notice. 2. Issued by JE/SE of S&T Department. 3. Consists of 03 foils i.e Record/Dis-Connection/Re-Connection. 4. Before allowing by SM on duty observe the movements at station and Take permission of SCR. 5. Advice concerned Cabin Master ,YM/CYM etc.
2	T/369(1)	<ol style="list-style-type: none"> 1. Advance authority to pass defective reception signals of the station in advance. 2. This is used in absolute block system only. 3. For goods trains it is issued from the station immediately in rear of the block station at which the signal becomes defective. 4. If the station immediately in rear happens to be a block hut, T/369(1) shall be issued from the station in rear of the block hut. 5. For mail express trains this authority shall be issued from the last stopping station of the train. 6. This authority shall not issued, when signal becomes no light, flickering, bobbing, conflicting, white light , failure in 'off' position or point flashing etc. 7. Depute competent Rly. Servant foot of the Home signal will show proceed hand signal. 8. LP shall not pass signal at "ON" if proceed hand signal is not showing from the foot of such defective signal.
3	T/369(3b)	<p>It is a written authority signals at 'ON' or in defective position</p> <ol style="list-style-type: none"> i. For Piloting a train into the station when outer, home or routing signal at ON or defective. ii. For piloting a train into the station where conflicting signal occurs. iii. For piloting in a train into the station when approaching stop signal remains flickering/bobbing or showing more than one aspect or no light or white light. iv. For passing IB signal at ON or defective when rear station is aware of the defective of IB signal. v. For dispatching a train when lock and block instrument is suspended. vi. For piloting out a train from the station during non-interlocking work. vii. For piloting out a train when departure stop signals at ON or defective. viii. Before issuing it, ensure all facing points are locked & clamped with pad lock. If Motor operated points both end shall be locked & clamped with pad lock.
4	T/409	Caution Order
5	T/ A 409	NIL Caution Order
6	T/ B 409	Reminder Caution Order
7	T/431	Train Examination Advice/Report
8	T/509	Authority to receive a Train on an Obstructed line/Non-Signaled Line
9	T/511	Authority to start from a non- signaled line

10	T/512	Authority to start from a line with a Common Starter Signal
11	T/A602	BLOCK TICKET: Authority to proceed for relief engine/Train into an obstructed Block Section in Absolute Block System.
12	T/B602	Authority for opening communication during Total Interruption of Communication on Single line section.
13	T/C602	Authority for working of trains during Total Interruption of Communication on Double line section
14	T/D602	Authority for TSL Working on Double line section
15	T/E602	Line Clear enquiry message asking line clear for dispatch of trains during Total Interruption of Communication on Single line section.
16	T/F602	Conditional Line Clear reply Message
17	T/G602	Conditional Line Clear Ticket (up)
18	T/H602	Conditional Line Clear Ticket (Dn)
19	T/I602	Message on Restoration
20	T/609	Guard's written permission to Loco Pilot, when allowed parted/detached portion to proceed next station from mid-section
21	T/806	Shunting Order.
22	T/A912	Authority to Pass automatic/semi-Automatic/Manually operated Gate Stop signal
23	T/B912	Authority to proceed without Line Clear in Automatic Block System.
24	T/C912	BLOCK TICKET: Authority to proceed for relief engine/Train into an obstructed Block Section in Automatic Block System.
25	T/D912	Authority to proceed on Automatic Block System during prolonged failure of Automatic signals.
26	T/1410	Train intact arrival register
27		T/C-1425 Paper line clear ticket for UP train T/D-1425 Paper line clear ticket for DN train <ol style="list-style-type: none"> i) During S/L working introduced on D/L auto block system. ii) To pass last stop signal at ON or defective on token less system (S/L). iii) When block token instrument is out of order or not provided.(S/L).
28	T/A1425	Line Clear enquiry and reply message(Train dispatching station)
29	T/B1425	Line Clear enquiry and reply message(Train receiving station)
30	T/1518	Trolley/Lorry/OHE ladder trolley notice
31	T/1525	Motor trolley permit
32	OP/T-1A	Competency certificate for working of points & signals
33	OP/T-1B	Competency certificate for working on Block Instruments

34	OP/T-1C	Competency certificate for working on PI/RR/SSI
35	OP/T-469	Caution register
36	OP/T-456	Controllers train order book
37	OP/T-48	Station Masters Diary
38	OP/T-28(R)	Train signal cum log register for Single/Double line section
39	OP/T-28(B)	Train signal cum log register at Double line section provided with Lock and Block Instruments at end cabins.
40	ED 9.39(UP) ED 9.40(DN)	Engineering stop order for UP and Down trains.
41	OCC key/ SKB	Shunting authority of stations provided with token less instrument on S/L section.

AUTHORITY TO PROCEED IN NORMAL WORKING:

Sl. No	SYSTEM OF WORKING	D/L OR S/L	AUTHORITY
1	ABSOLUTE BLOCK SYSTEM	D/L	Taking 'OFF' of last stop signal
2	ABSOLUTE BLOCK SYSTEM	S/L (TOKEN INSTRUMENTS)	TOKEN
3	ABSOLUTE BLOCK SYSTEM	S/L (TOKENLESS INSTRUMENTS)	Taking 'OFF' of last stop signal

AUTHORITY TO PROCEED IN ABNORMAL WORKING:

Sl. No	SYSTEM OF WORKING	D/L OR S/L	AUTHORITY	REMARKS
4	ABSOLUTE BLOCK SYSTEM	D/L	LAST STOP SIGNAL FAILS OR L&B INSTRUMENT SUSPENDED	T/369(3b) WITH ID No.&PN.
5	ABSOLUTE BLOCK SYSTEM	D/L	TSL WORKING	T/D 602 WHICH INCLUDES. (1) LINE CLEAR TICKET. (2) AUTHORITY TO PASS LSS AT "ON" . (3) CAUTION ORDER
6	ABSOLUTE BLOCK SYSTEM	D/L	T/I OF COMMUNICATION	T/C 602 WHICH INCLUDES. 1. AUTHORITY TO PROCEED WITHOUT LINE CLEAR. 2. AUTHORITY TO PASS LSS AT "ON" 3. CAUTION ORDER.25/10

SI. No	SYSTEM OF WORKING	D/L OR S/L	AUTHORITY	REMARKS
7	ABSOLUTE BLOCK SYSTEM	D/L S/L	To allow a train into obstructed block section	T/A 602- AUTHORITY TO PROCEED FOR RELIEF ENGINE/TRAIN INTO AN OCCUPIED BLOCK SECTION, WHICH INCLUDES:- 1.BLOCK TICKET TO PROCEED WITHOUT LINE CLEAR. 2.AUTHORITY TO PASS LSS AT "ON" 3.CAUTION ORDER 15/10
8	ABSOLUTE BLOCK SYSTEM (D/L)	D/L	Other than introducing TSL working. Section to allow an engine or Goods train only on wrong line	T/A602 which includes (1)BLOCK TICKET TO PROCEED WITHOUT LINE CLEAR. (2) AUTHORITY TO PASS LSS AT "ON" (3) CAUTION ORDER 15/10
9	(S/L)	S/L	1.TOKEN INSTRUMENT SUSPENDED 2.TOKEN INSTRUMENT WORKING BUT LSS FAILED	T/C 1425UP,T/D1425Dn WITH P.no & D no T/369(3b)
10	(S/L)	S/L	TOKENLESS INSTRUMENT SUSPENDED OR LSS FAILED	T/C 1425UP, T/D1425Dn WITH P.no. & ID no
11	(S/L)	S/L	To open communication during total interruption of communication	T/B 602 which includes 1. Authority to proceed without line clear 2. Authority to pass LSS at "ON" 3. CAUTION ORDER 15/10 4. Line Clear Reply Message (T/F 602 5. Line Clear Enquiry Message (T/E 602)
12	ABSOLUTE BLOCK SYSTEM	S/L	After opening communication	i) CLCT T/G602 up & T/H602 Dn ii) T /369(3b) Pilot out memo iii) Caution order iv) Conditional Line Clear Reply Message (T/F 602) v) Line Clear Enquiry Message (T/E 602)

ABNORMAL WORKING IN AUTOMATIC BLOCK SYSTEM :

SL. NO	D/L OR S/L	CONDITION	AUTHORITY
1	D/L	If the last stop signal fails	1. T/A 912
2	D/L	Series of automatic stop signal fail but communication available	1. T/D 912 2. CAUTION ORDER
3	D/L	When signals are operative but communication fails	C/O-T/B409 (A Copy of list of trains to be handed over to Loco Pilot to hand over to SM of the station in advance)
4	D/L	Failure of all signals and communications.	T/B 912. which includes i. Authority to proceed without line clear. ii. Authority to pass stop signal at "on". iii. Caution order.(Speed) 25/10
5	D/L	TSL WORKING	1. PLCT(T/C 1425UP, T/D1425DN) 2. T/A 912 3. Caution Order Speed 1st train 25kmph Subsequent at Normal speed NOTE:- These Authorities/Documents to be given to all trains running in wrong direction and each 1 st train running in right direction. Subsequent trains on right direction following each 1 st train shall be given only a caution order
6	S/L	During suspension of panel and no means of communication are available (TO OPEN COMMUNICATION)	T/B 602 Which includes i. Authority to proceed without line clear. ii. Authority to pass all stop signal at "on" (T/A 912) (given separately) iii. Caution order 15/10 iv. Line clear enquiry message. v. Conditional line clear reply message with Pvt. No.
7	S/L	If the Panel Working is Suspended due to direction of Traffic cannot be establish but communication is available	1. PLCT with Pvt. No. & I.D. No. 2. T/A 912 Pilot Out 3. Caution Order- 1 st Train 25kmph Subsequent at Booked speed
8	S/L	Direction of Traffic is Established but Last Stop Signal Failed	1. T/A 912 (only for S/L) 2. T/A 912 + T/511 if 3 rd Line
9	S/L & D/L	To allow a Train/Engine into an automatic Block Signaling Section Which is already Occupied	T/C 912 Which Includes i. Authority to proceed for relief Engine into an Automatic Block signaling Section ii. Caution Order-Speed 15/10 Kmph iii. Authority to pass all governing / Non governing signal at 'ON '(T/A 912) if Required

MATERIAL TRAIN WORKING:

Sl. No	SYSTEM OF WORKING	D/L OR S/L	AUTHORITY	REMARKS
1	ABSOLUTE BLOCK SYSTEM	D/L	ON RIGHT LINE TO WORK AND PROCEED.	(1) TAKING "OFF" OF THE LSS. (2) CAUTION ORDER T/B 409
2	--do--	D/L	WHEN ALLOWED TO WORK ON WRONG LINE AND SREETURN	(1) CAUTION ORDER T/B 409 WITH BLOCK BACK PRIVATE NO. (2) T/ 511
3	--do--	S/L (TOKEN)	M. T. TO WORK IN SECTION AND PROCEED OR RETURN TO STARTING STATION.	(1) (TOKEN) (2) CAUTION ORDER T/B 409
4	--do--	S/L (TOKENLESS)	M. T. TO WORK IN SECTION AND PROCEED OR RETURN TO STARTING STATION.	(1) TAKING "OFF" OF THE LSS (2) CAUTION ORDER T/B 409
5	ABSOLUTE BLOCK SYSTEM	D/L OR S/L	ON OBSTRUCTED SECTION.	(1) BLOCK TICKET(T/A 602). (2) CAUTION ORDER T/B 409
6	AUTOMATIC BLOCK SYSTEM	D/L OR S/L	ON OBSTRUCTED SECTION.	(1) BLOCK TICKET (T/C 912) (2) T/A 912 TO PASS STOP SIGNAL AT "ON". (3)CAUTION ORDER T/B 409 SPEED 15/10.

MOTOR TROLLY WORKING:

Sl. No	SYSTEM OF WORKING	D/L OR S/L	AUTHORITY	REMARKS
1	ABSOLUTE BLOCK SYSTEM	D/L	ON LINE CLEAR	(1) T/369(3b) WITH PRIVATE NO. (2) CAUTION ORDER (T/b 409)
2	--do--	S/L TOKEN AREA	ON LINE CLEAR	(1) TOKEN. (2) TAKING "OFF" OF DEPARTURE SIGNALS. (3) CAUTION ORDER (T/B 409)
3	--do--	S/L (TOKEN LESS AREA)	ON LINE CLEAR	(1) T/ 369(3b) WITH PRIVATE NO. (2) CAUTION ORDER (T/B 409)
4	--do--	D/L S/L	FOLLOWING A TRAIN/ANOTHER MOTOR TROLLY	MOTOR TROLLEY PERMIT (T/1525) WITH PRIVATE NO. CAUTION ORDER (T/B 409)
5	ABSOLUTE BLOCK SYSTEM	D/L OR S/L	IF TWO M/T FOLLOW (A) TO LEADING M/T (B) FOLLOWING M/T	C/O (T/B 409) WITH P.N. M/T PERMIT (TT/1525) WITH P.N. C/O (T/B 409)
6	AUTOMATIC BLOCK SYSTEM	D/L OR S/L	DURING DAY LIGHT FOLLOWING A TRAIN / M/TROLLEY	PERMIT(T/1525) WITH P.N. (T/B 409)
7	AUTOMATIC BLOCK SYSTEM	D/L OR S/L	AT NIGHT OR WHEN THERE IS NO TRAIN IN DAY TIME TO ALLOW A M/T FOLLOWING A TRAIN. 1. WHEN ONLY ONE TROLLEY IS RUNNING. 2. FOR FOLLOWING M/T	Automatic Block system will be suspended and Absolute Block system will be introduced T/369(3b)-Pvt No. & C/O

TYPES OF WHISTLE CODE (SR 4.50.01)

The whistle codes, which are used in different occasions, are mainly two types.

- i) Short Whistle '0'
- ii) Long Whistle '—'

The prescribed code of whistle shall be blown in different condition in different ways.

WHISTLE CODE

Sl No.	code	INDICATION
1	O	Before starting-
2	OO	i) Call for guard's signal ii) Signal not exchange by Guard or by Station staff.
3	OOO	i) Guard to apply brakes. ii) Train is out of control, Gd to assist.
4	OOOO	i) Protect in rear. ii) Train can not proceed.
5	----	i) Passing 'A' or 'IB' at ON. ii) On run acknowledgement Of Gd's signal
6	---- ----	Raise Pantograph
7	---- ---- ----	F.M. not clear
8	---- ---- OO	Call for guard to come to engine
9	----O ----O	i) Train Parting ii) Train arriving incomplete
10	O ---- O	i) Token not received. ii) Token missed. iii) With wrong authority to proceed. iv) Passing Stop signal at 'ON' on proper authority
11	O O ----	i) ACP ii) Insufficient vac. in eng. iii) Gd. Applies V/B. iv) Inter-communication apparatus used.
12	---- O O	i) Signal defective/drooping
13	000000000000000000	Apprehension danger.

BELL SIGNALS (SR 4.51.01)

For single or multiple unit electric trains, the following bell signal codes shall be used between the Motorman and the Guard. In case of failure of electric bell equipment in the cab, the codes shall be sounded by horn.

BELL CODE

S.No.	Code of Bell signal	Indication	Acknowledgement
1.	0	Stop Train	0
2.	00	Start Train	00
3.	000 pause 0	To push back train	000 pause 0
4.	00	During run through	00
5.	000	Guards required by Loco Pilot	000
6.	00000	Brakes tested found alright	00000
7.	00000 pause 0	Brakes tested and not found alright	00000 pause 0
8.	0000 pause 0000	Information to Motorman regarding guard leaving the cab.	0000 pause 0000
9.	00 pause 00	Passing automatic signal at on	00 pause 00
10.	0000	Protect train in rear	0000
11.	00pause 0	Proceed with caution while working under GR 4.21 (2) (a)	00pause 0
12.	000 pause 000	Guards warning to Motorman if EMU exceeds the prescribed speed after passing an auto signal at 'ON'	000 pause 000
13.	0 pause 0	Zone of speed restriction is over, resume prescribed speed	0 pause 0

BLOCK INSTRUMENT:

14.05. Bell code.—For the signaling of trains, the prescribed code of bell signals as detailed below, shall be used, and a copy thereof shall be exhibited in each block station near the place of operation of the block working equipment—
(One Stroke or Beat)

REF. NO.	HOW SIGNED	INDICATION	HOW ACKNOWLEDGED
1.	0 (One)	Call Attention, or Attend Telephone	0 (One)
2.	00 (Two)	Is Line Clear, or Line Clear Enquiry	00 (Two)
3.	000 (Three)	Train Entering in Block Section	000 (Three)
4 (A).	0000 (Four)	Train Out of Block Section	0000 (Four)
(B).	0000 (Four)	Obstruction Removed	0000 (Four)
5(A).	00000 (Five)	Cancel Last Signal	00000 (Five)
(B).	00000 (Five)	Signal Given in Error	00000 (Five)
6(A).	000000 (Six)	Obstruction Danger Signal(General)	000000 (Six)
(B).	000000-0 (Six Pause One)	Stop and Examine the Train	000000-0 (Six Pause One)
(C).	000000-00 (Six Pause Two)	Train Passed without Tail Lamp or Tail Board	000000-00 (Six Pause Two)
(D).	000000-000 (Six Pause Three)	Train Divided	000000-000 (Six Pause Three)
(E).	000000-0000 (Six Pause Four)	Vehicle Running Away in Wrong Direction on Double Line or into the Block Section on Single Line	000000-0000 (Six Pause Four)
(F).	000000-00000 (Six Pause Five)	Vehicle Running Away in Right Direction on Double Line	000000-00000 (Six Pause Five)
7.	0000000000000000	Testing (16SixteenStroke or Beat)	0000000000000000

NOTE:-

1. '0' INDICATES A STROKE OR A BEAT AND '-' INDICATES A PAUSE.
2. EACH SIGNAL SHALL BE GIVEN SLOWLY AND DISTINCTLY.
3. EXCHANGE OF BELL CODES UNDER REFERENCE NUMBERS 3 AND 4 ARE NOT REQUIRED IN A SECTION PROVIDED WITH BLOCK PROVING AXLE COUNTER OR TRACK CIRCUIT HAVING COMPLETE TRACK CIRCUITING OF STATION YARD EXCLUDING NON-RUNNING LINES ON EITHER END.

14.06. Acknowledgement of signals.—

- (1) Each signal received shall be acknowledged by sending its authorised acknowledgement.
- (2) No signal shall be acknowledged until it is clearly understood.
- (3) A signal shall not be deemed to be complete until it is acknowledged.
- (4) If the station to which a signal is sent does not reply, the signal shall be repeated at intervals of not less than 20 seconds until reply is received.

CORRECTION SLIPS (Summary)

Addendum & Corrigendum of G&SR/S.E.Railway.

Correction slip no.	Rule no.	Topic	Old Existing/ Replacement	New charge
82 15.05.12	SR 3.23.02 Page no.35	Starter indicators	Insert	<p>1. Starter indicator provided to repeat the aspect of starter signal to Gd.</p> <p>2. Due to typical yard layout.</p> <p>3. Exhibit No light when starter "ON"</p> <p>4. Exhibit Yellow light when starter "OFF"</p> <p>5. This is not a signal hence marker shall not be provided.</p> <p>6. Not shown in SI Plan.</p> <p>7. In case failure inform S&T dept.</p> <p>8. Give C/O to Gd for information from previous Stn./DCO Stn./available means from the concerned stn.</p>
83 31.05.12	SR 3.64.04 Page-69	Life of Detonator	Delete 07 yrs life mfg. After 2010	<p>i) Normal life of detonator is 05 yrs. Manufactured from 2010 onward.</p> <p>ii) Extended life is 08 yrs . which shall extended after testing detonators and found satisfactory(i.e 5+1+1+1=8 yrs.)</p>
84 13.08.12	-	Reprint G&SR-2011 corrections	Add/Delete /Change	<p>Change of designations such as Loco Pilot as LP, PWI as JE/SE/SSE(P way works)</p> <p>Flare/Fusee signal as Warning signal</p> <p>Lowering as Taking-off</p> <p>Inclusion of correction slip from 46 to 81 in reprint G&SR-2011.</p>
85	SR 16.06.01 Page No.261	No light in gate signal	Insert	<p>1. When gate is opened for road traffic.</p> <p>2. Fix Banner Flag in approaching direction of train.</p> <p>3. Banner Flag is placed at a distance of 5 mts. from gate</p> <p>4. In foggy weather & night time Fix red light, facing towards approaching direction of train.</p>
85	SR 4.01.01 Page No. 88	Time set	Replace	<p>i) TCI relay time at 14.10 hrs.</p> <p>ii) CHC/Dy.CHC check correct time and set it inform SCR</p> <p>iii) SCR inform all stn. On common ring at 16.00 hrs.</p> <p>iv) All stn. SM on duty correct time</p> <p>v) Time adjustment noted in</p>

				TSR & SM diary vi) SM inform end cabin/gates viii) SM correct platform time with the help of S&T.
86 04.09.16	3.07 GR(page no. 18 of 2011 edition) Sub-rule (3) Under sub heading 'Attention & 'Proceed' Page No.18	Aspect of single Distant signal "Attention"	Change	i) Proceed and be prepared to pass next stop signal at such restricted speed as given under Spl. Inst. ii) The train is being received on M/L and reqd. to stop at Starter Or on a Loop line stop at Starter Or to pass run through via Loop line
		'Proceed'	Change	Proceed Block section ahead is clear, train is to pass through the station via M/Line
86 04.09.16	3.07 GR(page no. 19 of 2011 edition) Sub-rule (4) Under sub heading 'Attention & 'Proceed' Page No.19	Aspect of Double Distant signal then Distant signal "Attention"	Changed	i) Proceed and be prepared to pass next stop signal at such restricted speed as given Spl.Inst. ii) The train is being received on M/L and reqd. to stop at Starter Or on a Loop line stop at Starter Or to pass through via Loop line
		'Proceed'	Changed	Proceed Block section ahead is clear, train is to pass run through the station via M/Line.
87 05.10.12	SR 5.23.01 Page-298/143	Securing of vehicles	Replace	Read correction slip no 87 carefully and explain.
88 02.01.13	SR 16.04.01 Page-261		Added	Gateman at night time hold the hand signal white light "pointing towards him".
89 31.01.13	SR 5.03.06 Page No.139	SPI	Added	Shunting Permitted Indicator Read fully the correction slip of 89 the working procedures of SPI and explain in detail.
90 19.04.13	SR. 4.09.01 Item no.17 Page No.91	Issue of caution order	Replace existing Item no.17 under SR. 4.09.01	When communication cannot be established with the Gateman of a mid-section level crossing gate provided with telephone and not protected by gate signal.
	SR 16.03.04 (a)(ii) Page No.260	Mid-section L-xing gate non-protected gate signal and communication failure.	Replace existing Clause (a)(ii) of SR 16.03.04	i) LP approach LC gate cautiously and shall be able to stop sort of gate in case - gateman not found or - gateman shows danger signal - gateman does not show green signal. ii) LP will pass gate cautiously without stopping. When gateman shows green signal.

	SR 16.03.04 (b)(i) Page No.260	Mid-section L-xing gate non-protected gate signal and communication failure.	Replace SR 16.03.04 (b)(i)	If Comply GR 3.73(2) (c), LP shall stop his train and ascertain that the gateman is available and in a condition to perform his duties, The LP will inform SM over gate telephone. No need to issue c/o to following trains. Otherwise continue to issue c/o.
	SR 16.03.05 Page No.260	Only rule numbering	Replace existing Clause SR 16.03.05	Re number SR 16.03.05, SR 16.03.06 & SR 16.03.07 as SR 16.03.06, SR 16.03.07 & SR 16.03.08 respectively.
	SR 16.03.05 Page No.260	Mid-section L-xing gate protected gate signal and communication failure.	Replace SR 16.03.05	Not necessary to issue caution order & follow GR 3.73
91 25.06.13	SR. 3.36.02 b(ii) Page-39	Written advice to LP where power signal & route relay yards or if the signals are interlocked with a mechanical/electrical time release system.	Delete	This correction slip has been modified by the latest correction slip no. 97.
92 18.09.13	SR.3.38.05 As SR 3.38.06 Page-43	Rules for the working of trains at stations provided with Central Panel	Added	i) Reception & Dispatch of trains stated ii) Include in SWR, where Central Panel commissioned. iii) Refer the Correction slip no. 92 in detail to explain the rules of Central Panel working.
93 09.09.14	SR 9.12.09 (after SR 9.12.08) Page-201	Auto section single line failure of Starter & Advance Starter signal after establishing direction of traffic	Added	i) Authority to proceed should be T/A 912 & T/511 in reference to BWM 6.23(iv)
	SR 14.04,01 Page-212	Extension of Competency certificate within 06 months of retirement	Added	i) The competency certificate of SM/ASM shall be extended by AOM. No need to depute Refresher Training who is to retire within 06 months. ii) The competency certificate of STJM/CM/PM shall be extended by DTI. No need to depute Refresher Training who is to retire with in 06 months.
93 09.09.14	SR.2.11.01 d(111) New Para Page-11	Bad riding attributable to any defect in P-Way	Added	i) 1 st train allowed affected section with caution order . ii) Verify, if satisfied pass with 10 KMPH. iii) If not safe, stop & inform to attend engg. officials to rectify.
	SR.3.61.01 Page-65	Detonators	Replace	i) supply 20 detonators instead of 24 to fog signal man.

	SR.3.61.01(g) Page-66	Fog signal man at fog post	Replace 2 nd sentence	On single line and double line Fog signal man shall show white light for departing train.
	SR.4.09.09(iv) Page-95	Signature on Caution order register.	Replace	i) ASM /SM'S of each shift sign on caution order register every Monday. ii) SM in charge confirm it.
	SR.4.35-03(d) Page-119	Bell Code	Replace	i) instead of EMU now EMU/MEMU/DEMU/DMU all will give 2 rings to start signal.
	SR.4.42.01(d) Page-120	Signal Exchange by Guard.	Replace	i) instead of <u>EMU(Push/Pull)/Rajdhani</u> , now it refers EMU/MEMU/DMU/DEMU, Rajdhani, Shatabadi, Duranto and other trains with SLR ,AC Gd compartment shall exchange of alright signal with LP by bell code. ii) Gd. Of these trains with Air condition break van shall observe stn. Staff signal, no need to exchange alright signal. iii) Stop train if stn. Staff shows any danger signal. iv) Other train's Gd. shall always exchange alright signal with station staff.
94 01.12.14	SR.4.35 Page No.118	Starting of trains	Added	i) Guard shall not give the signal to start without satisfying himself. That no one is travelling on roof or in unauthorized compartment. iii) Take help of GRP,RPF and station staff if needed.
95 13.01.15	SR.4.50.02 Page-126	Whistle Board	Replacement	i) W/L board 600mts. ii) RW/L board 250mts. iii) Continuous whistle from 250 mts. v) intermittent whistle from 600 mts. vi) RW/L means Repeater Whistle Board.
96 30.01.15	GR 4.21 Page 107	Driving an electric engine from rear cab.	Added	i) Electric engine and diesel engine having twin cab. ii) In case defect in front cab LP & ALP shall drive from rear cab and guard shall present in leading cab. iii) Guard blow horn and apply emergency brake. If required. iv) In case driving by ALP from rear than LP in leading cab. v) In case LP incapacitated then Qualified ALP drive with 25 kmph
97 15.05.15	GR 1.01 Page 1	Change of short Title	Replacement Change of	Change of short title & Commencement I.Rlys. (open

	GR-3.36 Page-38		short little	lines) general (amendment) Rules 2015 as instead of Rules 2011
	GR 1.01 Page 1	When Starter/Advance Starter put back in emergency.	Replacement	i) In an emergency to avert an accident Starter/Advance Starter may be put backed to "ON" position. ii) Ensure the said train has stopped. iii) Inform through secured means not to start or written memo. iv) Route shall not be altered. Unless acknowledgement obtained before Taking-off signal to another train.
98 10.09.15	SR15.25.09 Page 249/250	Light motor trolleys	Modification in Light Motor Trolley	i) MT & LMT as same ii) Minimum 3 trolley man & in no case shall exceed 6
99 29.10.15	SR.3.40.04 Page 49	"Terminal yards" placement of fixed stop boards/Dummy red signal for the movement of coaching/goods trains including shunting	Newly added	i) No need of SOL ii) Red signal/stop boards fix at fouling marks iii) Endorsed in SWR iv) May also be fixed at temporary terminal yards, for doubling/gauge conversion/new lines v) Painted yellow with letters 'STOP' in black and reflection from panel and night visible along with miniature red aspect. vi) LP/Shunter may pass this signal when proceed hand signal is shown by authorized Rly. servant.
100 11.05.16	SR.4.50.02 (b)(iii) Page No.126	Whistle Boards	change	i) RW/L boards shall be placed at all unmanned L-xing Only. ii) 250mts from L-xing iii) Continuous whistle from RW/L iv) intermittent whistle from W/L board upto RW/L.
101 07.11.16	SR 4.09.01 Page no. 91 Item :29	New signal commissioned/changed	15 days Continuous caution order	3 months Continuous caution order.
102 23.02.17	GR.3.07(7): SR 3.07.01 Page no. 20	Speed while passing signal at Caution aspect	Newly added	Speed should not exceed 40 kmph for coaching trains and 30 kmph for freight trains respectively.
103	GR.3.07(7): SR 3.07.01 Page no. 20	Speed while passing signal at Caution aspect	delete	Correction slip no 102 dated 23.02.17 is treated as cancelled.
104	SR. 16.03.03 a (I),(II), (III), (IV) b(I),(II), (III), (IV) Page NO. 258.		Replace	Replace Entire Para.

105	GR-3.07(7), SR 16.04.01(08) Page no – 260	Holding white light towards him self	Replace	Holding white light towards the track
106	Entire 104 is cancelled by correction slip no 106			
107	SR 4.19.01 Page No.-106	List of equipment of ALP	Insert	Tricolour Touch Red hand signal Green Hand Signal Hammer cum screwdriver,WTT
108	Sr 4.25.03 Page No.-111	Push- Pull	Insert New Para after 4.25.02(d)	Push pull train operation
109	SR 3.61.01(a)(b)(c) (i)(ii)(iii) at Page No.-64&65	Fog precaution	Replace	Train operation during fog – Precaution. Duties of LP during fog.
110	SR 4.25.02 Page No.-111	Air brake & Working piston	Replace	Replace word vacuum brake & At least last three piston are in working condition
111	SR-3.61.01(6) A&C Slip No.- 109 Sr-3.78.04 Page No.-65&85	Fog Precaution		Precaution by Loco Pilot during foggy weather
112	SR 16.01.01 Page No.-255	Gate competency	Replace	Competency certificate of Gateman
113	SR 3.78.04 Page No.85	Fog precaution.	Reproduce	Precaution by LP during FOG
114	USR 4.19.01 Page No.-106	ALP equipments.	Replace	List of Essential equipment of ALP
115	USR 3.78.6(a) after 3.78.06 Page No.84	Road LR.	Addition	Road learning of ALP/LP/Motorman
116	GR 15.09.03 Page No.- 233	Placement of banner flag and detonator.	Printing Mistake	Banner Flag Placed & Detonator Placed 90 & 180 Respectively
117	SR 16.04.01 add the following Note Page No.- 261	End cabins rules.	add the following Note	End cabins follow same rule as traffic L/C Gate
118	SR-2.10.02 after SR2.10.01 Page No.10	Use of mobile while on duty by train passing staff.	add the following Para	Switched off the mobile phone
119	SR-4.42.01a(i), Note & (ii) Page No.-20	All right signal	Replace	Replacement of All Right signal
120	GR-1.01, 1.02(31)&(32) at Page No.-1 GR-3.40(i) & 3.42 Page No.- 48&50	Short titles an commencement. Condition for taking of signals.	Replace Replace	Short title & Commencement, IBP in single Line, Double Line & Multiple Line Condition for taking off home Signal, LSS & IBSS
121	SR-4.19.01 a(I,II,III) Page No.- 104	Personnal equipments of guard.	Addition	Tail Board in Item No.-16, Hammer in Item No-17 & Chisel in Item No.-18
122	SR-4.19.01 a(i, ii) Page No.104 &	Personnal equipments of guard.	Replace	Item No.-4, 7 to be replaced with Guard and Loco Pilot's Hand Book in Print and Digital

	105			Form (In Tablet) Item No.-5 & (iii) Item No.-9 to be replace with – working time table in print form and digital form (in tablet) with all correction slip and appendices Rule Book may be either in print form and digital form
	SR-2.01.01(a) at Page No.-8	Rule Book	Addition	
123	SR-06.06.01 Page No.166	Breach of block rules.	Replace	Duty of Loco Pilot/Motorman/ Station Master/Guard when become aware that train entered in block section without authority to proceed Precaution and Prevention while vehicles escapes from station
	SR-6.11.01(b)		Addition	
124	SR-5.23.01 (b)(iii) Page No.143	Stabling	Replace	At least 4 skids were used to each below the outermost pair of wheels.
125	SR-4.10.01 & 4.10.02 Page No.-96	Speed		Speed of Train over turnouts
126	SR-14.04.01 Add the following lines after first sentence Page No.212	Competency certificate.	Addition	Principal ZRTI/SINI issue Competency Certificate for Gr- 'C' Staff & Instructor In-charge DTTS for Gr-'D' Staff. In exceptional circumstances validity may be extended locally by an officer not below the rank of AOM/ATM for a period of six month only.
127	Add Below USR 3.78 6(9) Page No. 84	Road LR & Signal Location Chart	Add	No separate for LP/ALP in case of existing section being added with D/L, T/L,M/L and existing signaling system being upgraded to Auto one, first trip 40/15 KMPH. Ensure display of location chart, Signal Location Table in a lobby as a ready reference for Crew & Guard.
128	Add below SR 14.04.01 & SR14.04.02 Page No.212	Block Competency	Add	ZRTI/SINI should include in their Block Competency Certificate Format-PI/RRI/EI/BPAS/SSDAC/MSDAC, and one day study tour may be arranged.
	Add below 3.39.08 Page No.48	Change in station working due to introduction of PI/RRI/EI/BPAC /SSDAC/MADAC	Add	In case of any change in working at a station due to introduction of PI/RRI/EI/BPAS/SSDAC/MSDAC, staff required to be made convergent TI/SSE to issue competency certificate which is duly counter signed by AOM/ARM. SSE(SIG) remain in station for Three to Four Days in each shift.
129	Replace GR 1.01 page No.01	Change in Title	Replace	These rules are called 2020

		Speed over facing point	Replace	Limit of speed over facing point shall not excide 30 KMPH.
	Add SR 4.43.02 (d) Page No.122	Duties of guard while working on train.	Add	Rules for observing and exchange of signal by guard while working on train.
	Add the following "NOTE" below Para (6) of SR 16.02.04 page No.257	Equipments at traffic or cabine operated gates on multipul lines.	Add	The number of hand signal detonator, Banner flag, and other required items shall be increased suitable.
130	Add the following lines below SR. 3.75.03 Page no.82	Passing IBSS at ON.	Add	Strike out "at a speed not exceeding 15 KMPH" while writing ID number & Pvt. Number in T/369/3b, also write "Pass IBSS at normal speed observing other speed restriction in force.
131	Add a second sentence in SR.02.02.01 at page no-8. Add SR.4.19.01 before SR.4.19.01 (a) at page 104.	Supply of Copies of Rules. Personal equi[pment of Guard.	Add Add	"The copy of rules to be supplied by Railway administration under General Rule 2.01 may be hard copy or electronic copy of the document or relevant extracts thereof." "Each Guard and Loco Pilot while on duty with his/her train shall have a copy (in hard or in electronic form) of these rules and relevant portion thereof, as supplied to him/her under rule GR.2.01 and a copy (in hard or in electronic form) of the working time table and the all correction slips and appendices, if any, inforce on that section of the railway over which the train is to run."

ABBREVIATIONS:

1	AAWS	Advance Approach Warning System.
2	ACD	Anti Collision Device
3	ACP	Alarm Chain Pulling
4	ACPCNF	Alarm Chain Pulled But Culprit Not Found
5	ADFM	Assistant Divisional Finance Manager
6	ADRM	Additional Divisional Railway Manager
7	AGM	Additional General Manager
8	AMUL	Anand Milk Union Limited.
9	AOM	Assistant Operations Manager
10	APO	Assistant Personnel Officer
11	ARME	Accident Relief Medical Equipment
12	ARMV	Accident Relief Medical Van
13	ART	Accident Relief Train.
14	ASR	As Soon As Ready
15	AWS	Auxiliary Warning System.
16	AYM	Assistant Yard Master
17	BCN	Bogie Covered Wagon With Pneumatic Brake
18	BOBRN	Bogie Open Bottom Rapid Discharge With Pneumatic Brake
19	BOBSN	Bogie Hopper Wagon Bottom Side Discharge With Pneumatic Brake
20	BOL	Block Over Lap
21	BOMN	Bogie Open Wagon For Military Loading With Pneumatic Brake
22	BOXN	Bogie Open Box Wagon With Pneumatic Brake
23	BOYN	Bogie Open Wagon For Ores Loading With Pneumatic Brake
24	BPAC	Block Proving Axle Counter
25	BPC	Brake Power Certificate
26	BRN	Bogie Flat Wagon With Pneumatic Brake
27	BSLB	Block Section Limit Board
28	BTPGLN	Bogie Tank Wagon For LPG Loading With Pneumatic Brake
29	BTPN	Bogie Tank Wagon For Petroleum Loading With Pneumatic Brake
30	BVZC	4 Wheeler Brake Van
31	BVZI	8 Wheeler Brake Van
32	BWL	Bogie Well Wagon
33	BWM	Block Working Manual
34	CAO (Const.)	Chief Administrative Officer (Construction)
35	CBC	Centre Buffer Coupler
36	CC	Carrying Capacity
37	CCC	Chief Crew Controller
38	CCRS	Chief Commissioner Of Railway Safety.
39	PCEE	Principal Chief Electrical Engineer
40	CELE	Coupled Electric Light Engine
41	CELE	Chief Electric Locomotive Engineer
42	CFTM	Chief Freight Transportation Manager
43	CHC	Chief Controller

44	CLI	Chief Loco Inspector
45	CLW	Chittaranjan Locomotive Works
46	CME	Chief Mechanical Engineer
47	CMPE	Chief Motive Power Engineer
48	CMS	Crew Management System
49	COA	Control Office Application
50	COFMOW	Central Organisation For Modernization Of Workshop
51	COIS	Coaching Operation Information Sysytem
52	PCOM	Principal Chief Operations Manager
53	CONCOR	Container Corporation Of India Limited
54	CORE	Central Organisation For Railway Electrification
55	PCPO	Principal Chief Personnel Officer
56	CPRO	Chief Public Relation Officer
57	CPTM	Chief Passenger Transportation Manager
58	CRB	Chairmain Railway Board
59	CEO	Chief Executive Officer
60	CRIS	Centre For Railway Information System
61	CRS	Commissioner Of Railway Safety.
62	CRSE	Chief Rolling Stock Engineer
63	CRT	Container Rail Terminal.
64	CSO	Chief Safety Officer
65	PCSTE	Principal Chief Signal & Telecommunication Engineer
66	CTC	Centralised Traffic Control
67	CTPC	Chief Traction Power Controller
68	CTPM	Chief Transportation Planning Manager
69	CUG	Closed User Group
70	CWC	Carriage And Wagon Controller
71	DAR	Discipline And Appeal Rules.
72	DCO	Divisional Caution Order
73	DEMU	Diesel Electrical Multiple Unit
74	DEN	Divisional Engineer
75	DFC	Dedicated Freight Corridor
76	DFCCIL	Dedicated Freight Corridor Corporation Of India Limited.
77	DFM	Divisional Finance Manager
78	DGM	Deputy General Manager
79	DLBI	Double Line Block Instrument
80	DLE	Diesel Light Engine
81	DLW	Diesel Locomotive Works
82	DMO	Divisional Medical Officer
83	DMRC	Delhi Metro Rail Corporation.
84	DMU	Diesel Multiple Unit
85	DOM	Divisional Operations Manager
86	DPC	Diesel Power Controller
87	DPO	Divisional Personnel Officer

88	DRM	Divisional Railway Manager
89	DRS	Deficiency In Rolling Stock
90	DRUCC	Divisional Railway Users Consultative Committee.
91	DS	Derailing Switch
92	DTI	Divisional Traffic Inspector
93	DYCE	Deputy Chief Engineer
94	E-ACT	Electronic Allotment For Congested Terminals
95	EBD	Emergency Braking Distance
96	EDD	Early Departure Detention
97	EFT	Emergency Field Telephone
98	EIMWB	Electronic In Motion Weigh Bridge
99	EKT	Electrical Key Transmitter
100	EMU	Electrical Multiple Unit
101	EOL	Engine On Load
102	EOTT	End Of Train Telemetry
103	EPB	Emergency Power Block
104	ESP	Engineering Scale Plan
105	ETA	Engineering Time Allowance
106	PFA	Principal Financial Advisor
107	FL	Flasher Light
108	FM	Fouling Mark
109	FOIS	Freight Operation Information System
110	FSD	Fog Safe Device
111	FSS	First Stop Signal
112	GDR	Guard Driver Check Report
113	GM	General Manger
114	GR	General Rules
115	GRRC	General Rules Review Committee
116	GS	Ordinary Second Class
117	GSCN	Generation Second Class Three Tier AC
118	GSM-R	Global System For Mobile Communication In Railway
119	HOER	Hours Of Employment And Period Of Rest
120	IBH	Intermediate Block Hut
121	IBP	Intermediate Block Post
122	IBS	Intermediate Block Signaling
123	IBSS	Intermediate Block Stop Signal
124	ICD	Inland Container Depot
125	ICMS	Integrated Coaching Management System
126	IOH	Intermediate Over Haul
127	IOW	Inspector Of Works
128	IRCA	Indian Railway Conference Association
129	IRCON	Indian Railway Construction Company Limited
130	IRCTC	Indian Railway Catering & Tourism Corporation
131	IRFC	Indian Railway Finance Corporation

132	IRICEN	Indian Railways Institute Of Civil Engineering
133	IRITM	Indian Railways Institute Of Transport Management
134	ISMD	Infringement Of Standard Moving Dimensions
135	ISRT	Inter Station Running Time
136	ITES	Integrated Train Enquiry System.
137	IVRS	Interactive Voice Response System
138	JSE	Joint Section Expansion
139	KRC	Konkan Railway Corporation.
140	LGS	Second Class Coach (Sg)
141	LGSLR	Second Class Cum Luggage And Brake Van (Sg)
142	LHB	Linke Hoffman Busch
143	LHS	Limited Height Subway
144	LI	Loco Inspector
145	LSS	Last Stop Signal
146	LVCD	Last Vehicle Checking Device
147	LVI	Last Vehicle Indicator
148	LWACCN	A/C Three Tier Sleeper Coach (EOG)
149	LWACCW	A/C Two Tier Sleeper Coach (EOG)
150	LWCBAC	A/C Hot Buffet Car (EOG)
151	LWFAC	A/C First Class Coach (EOG - End On Generator)
152	LWFCZAC	A/C Executive Chair Car (EOG)
153	LWGACCN	A/C Three Tier Sleeper Coach (SG)
154	LWGACCW	A/C Two Tier Sleeper Coach (SG)
155	LWGFAC	A/C First Class Coach (SG - Self Generator)
156	LWGSCN	Three Tier Sleeper Coach (SG)
157	LWLRRM	Brake Luggage Cum Generator Car
158	LWR	Long Welded Rail
159	LWSCZAC	A/C Chair Car (EOG)
160	MACL	Multiple Aspect Colour Light
161	MASA	Multiple Aspect Signaling Arrangement
162	MAUQ	Multiple Aspect Upper Quadrants.
163	MCB	Miniature Circuit Breaker
164	ME	Member Electrical
165	MELE	Multiple Electric Light Engine
166	MEMU	Mainline Electrical Multiple Unit
167	MFD	Maschinen Fabriken Deutschland
168	MGR	Merry Go Round
169	MLQ	Modified Lower Quadrant
170	MOMA	MANUALLY OPERATED MULTIPLE ASPECT
171	MoR	MINISTRY OF RAILWAY
172	MoSR	MINISTER OF STATE FOR RAILWAY
173	MPS	MAXIMUM PERMISSIBLE SPEED
174	MRT	MINIMUM RUNNING TIME
175	MTI	MATERIAL TRAIN INSPECTOR

176	MTRC	Mobile Train Radio Communication.
177	NAIR	National Academy of Indian Railways
178	NBD	Normal Braking Distance
179	NBFU/ NBWT	BOGIE WELL WAGON WITH PNEUMATIC BRAKE
180	NBLC	BOGIE LOW PLATFORM WAGON FOR CONTAINER LOADING WITH PNEUMATIC BRAKE
181	NBTAB	BOGIE TANK WAGON FOR ALLUMINIUM POWDER WITH PNEUMATIC BRAKE
182	NCDRC	NATIONAL CONSUMER DISPUTE REDDRESSAL COMMISSION
183	NDMA	National Disaster Management Association.
184	NRT	NORMAL RUNNING TIME
185	NTES	NATIONAL TRAIN ENQUIRY SYSTEM
186	ODC	OVER DIMENSIONAL CONSIGNMENT
187	OES	OBEY ENGINEERING SIGNAL
188	OHE	OVER HEAD EQUIPMENET
189	OTOS	ONE TRAIN ONLY SYSTEM
190	PAM	Punctuality Analysis Module
191	PAMS	Passenger Amenities Management System.
192	PCCM	PRINCIPAL CHIEF COMMERCIAL MANAGER
193	PDD	PRE DEPARTURE DETENTION
194	PEASD	Passenger Emergency Alarm Signal Device.
195	PFT	PORTABLE FIELD TELEPHONE/PRIVATE FREIGHT TERMINAL
196	PGRM	PUBLIC GRIEVANCES REDDRESSAL MACHINERY
197	PLCT	PAPER LINE CLEAR TICKET
198	PME	PREVENTIVE MAINTENANCE EXAMINATION
199	PMS	PARCEL MANAGEMENT SYSTEM
200	POH	PERIODIC OVER HAUL
201	POMKA	PORTABLE MEDICAL KIT FOR ACCIDENT
202	PPP	PUBLIC PRIVATE PARTNERSHIP
203	PQRS	PLASSERS QUICK RELAYING SYSTEM
204	PREM	PARTICIPATION OF RAILWAY EMPLOYEES IN MANAGEMENT
205	PSR	PERMANENT SPEED RESTRICTION
206	PTT	PUBLIC TIME TABLE
207	RAS	RAKE ALLOTMENT SYSTEM
208	RDSO	RESEARCH DESIGN AND STANDARD ORGANISATION
209	RDW	RAIL DOLLY WORKING
210	rites	Rail India Technical and Economic Services.
211	RLDA	RAIL LAND DEVELOPMENT AUTHORITY
212	RMS	RAKS MANAGEMENT SYSTEM
213	ROH	Routine Over haul.
214	ROSHAN	Rolling Stock Health Analyst.
215	RRI	ROUTER RELAY INTERLOGGING
216	RSC	RAILWAY STAFF COLLEGE
217	RVNL	RAIL VIKAS NIGAM LIMITED

218	SATSANG	SOFTWARE AIDED TRAIN SCHEDULING AND NETWORK GOVERNANCE
219	SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
220	SCO	SECTIONAL CAUTION ORDER
221	SDGM	Senior Deputy General Manager.
222	SDIR	STOP DEAD IF REQUIRED
223	SGE	Siemens and General Electrical Railway Signal Company Ltd.
224	SIMRAN	SATELLITE IMAGING FOR RAIL NAVIGATION
225	SIP	Signaling & Interlocking Plan
226	SLB	SHUNTING LIMIT BOARD
227	SLR	SECOND CLASS LUGGAGE ROOM CUM GUARD BRAKE VAN
228	SM	STATION MASTER
229	SOL	SIGNAL OVERLAP
230	SP	SECTIONING AND PARALLELING POSTS
231	SPAD	SIGNAL PASSED AT DANGER
232	SPARME	SELF PROPELLED ACCIDENT RELIEF MEDICAL EQUIPMENT
233	SPARMV	Self Propelled Accident Relief Medical Van.
234	SPART	SELF PROPELLED ACCIDENT RELIEF TRAIN
235	SPART	Self-Propelled Accident Relief Train.
236	SPI	SHUNTING PERMITTED INDICATOR
237	SPO	SENIOR PERSONNEL OFFICER
238	SPURT	Self Propelled Ultrasonic Rail Testing Car.
239	SR	SUBSIDIARY RULES
240	Sr DFM	SENIOR DIVISIONAL FINANCE MINISTER
241	Sr DME	SENIOR DIVISIONAL MECHANICAL ENGINEER
242	Sr DSTE	SENIOR DIVISIONAL SIGNAL AND TELECOMMUNICATION ENGINEER
243	Sr. DEE	SENIOR DIVISIONAL ELECTRICAL ENGINEER
244	Sr. DPO	SENIOR DIVISIONAL PERSONNEL OFFICER
245	Sr. DSO	SENIOR DIVISIONAL SAFETY OFFICER
246	SRIJAN	STATION REJUVENATION INITIATIVE THROUGH JOINT ACTION
247	SS	SWITCHING STATION
248	SSD	Speed Sensing Device.
249	SSDAC	Solid State Digital Axle Counter.
250	SSE	SENIOR SECTION ENGINEER
251	SSI	SOLID STATE INTERLOGGING
252	SSP	SUB-SECTIONING AND PARALLELING POSTS
253	SWR	STATION WORKING RULES
254	SWRD	Station Working Rule Diagram.
255	T/G OR TG	TERMINATION FOR GOODS TRAIN
256	T/P or TP	TERMINATION FOR PASSENGER TRAIN
257	TACL	TWO ASPECT COLOUR LIGHT
258	TALQ	TWO ASPECT LOWER QUADRANT
259	TASA	TWO ASPECT SIGNALLING ARRANGEMENT
260	TAST	TWO ASPECT SIGNALLING TERRITORY
261	TAWD	TRAINS ACTUATED WARNING DEVICE

262	TAWS	TRAIN ACTUATED WARNING SYSTEM
263	TDC	TARGET DATE OF CANCELLATION
264	TELE	TRIPLE ELECTRIC LIGHT ENGINE (consists power)
265	TFO	TRACTION FOREMAN
266	TIC	TOTAL INTERRUPTION OF COMMUNICATION
267	TIELS	TERMINAL INTENSIVE CUM ENGINE ON LOAD SCHEME
268	TLBI	TOKEN LESS BLOCK INSTRUMENT
269	TLC	TRACTION LOCO CONTROLLER
270	TMM	TRACK MAINFRAME MACHINE
271	TMS	TERMINAL MANAGEMENT SYSTEM
272	TPC	TRACTION POWER CONTROLLER
273	TPMS	TERMINAL PIPELINE MANAGEMENT SYSTEM
274	TPWS	TRAIN PROTECTION AND WARNING SYSTEM
275	TSL	TEMPORARY SINGLE LINE
276	TSR	TRAIN SIGNAL REGISTER/TEMPORARY SPEED RESTRICTION
277	TSTS	TRAIN STAFF AND TICKET SYSTEM
278	TTM	TIE TAMPING MACHINE
279	TVU	TRAIN VEHICLE UNIT
280	TWO	TEMPORAY WORKING ORDER
281	UFSBI	Universal Fail Safe Bock Interface.
282	VCD	VIGILANCE CONTROL DEVICE
283	VDU	VISUAL DISPLAY UNIT
284	VG	VEHICLE GUIDANCE
285	VP/VPU	PARCEL VAN / VPH - HIGH CAPACITY PARCEL VAN
286	VTO	VISIBLE TEST OBJECT
287	VVN	MILK VAN / CZAC - CHAIR CAR
288	W Board	WHISTLE BOARD
289	WCB	VESTIBULED PANTRY CAR
290	WCD	VESTIBULED DINING CAR
291	WGACCN	VESTIBULED SELF GENERATION THIRD AC / AC THREE TIER
292	WGACCW	VESTIBULED SELF GENERATION SECOND AC/AC TWO TIER
293	WGFACCW	VESTIBULED SELF GENERATION FIRST AC CUM SECOND AC
294	WGSCN	VESTIBULED SELF GENERATION SECOND CLASS THREE TIER
295	WGSCZ	VESTIBULED SELF GENERATION SECOND CLASS CHAIR CAR
296	WILD	WHEEL IMPACT LOAD DETECTOR
297	WLRRM	VESTIBULED POWER CAR CUM LUGGAGE WITH GUARDS COMPARTMENT
298	WTR	WAGON TURN ROUND
299	WTT	WORKING TIME TABLE
300	WWB	WAGON WAY BILL
301	YM	YARD MASTER
302	YMS	YARD MANAGEMENT SYSTEM
303	ZRTI	ZONAL RAILWAY TRANING INSTITUTE
304	ZRUCC	ZONAL RAILWAY USERS CONSULTATIVE COMMITTEE

Collection of Objective Questions

Fill in the blanks:

1. Hand Shunting speed is
2. Maximum permissible speed is fixed by
3. The dead engine must be attached
4. Collision is Class accident.
5. The banner flag is a
6. Block Over Lap in case of MACLS ismts.
7. Safety radius of detonator is
8. Speed of an engine with block ticket is
9. Stations in automatic signalling territory are classified as class.
10. For ordering ARME, total numbers of hooter sounds are
11. Accident mock drill for ARME/ART is done in months.
12. Speed of first train during Total interruption of communication in single line is
13. The normal aspect of Automatic signal in automatic signalling system is
14. The speed of a train when crane is attached to it
15. Speed over non-interlocked facing point is
16. Speed of first train during Temporary single line working is
17. T/806 is an authority for
18. BSLB is provided on class station equipped with MLQ/MOMA.
19. There are appendices in the Station Working Rule.
20. Breach of block rule is Class accident.
21. Signal passed at danger is class accident.
22. Maximum number of explosive wagons that can be hauled by goods train is
23. A colour light distant signal may be combined with _____ & _____ signal under approved special instruction.
24. Catch siding protects
25. Slip siding protects
26. The safety distance of OHE ismts
27. Adequate distance for lowering Home signal is in case of two aspect signaling.
28. Last Stop signal entry of train into next block section.
29. Speed of an engine while pushing outside station limit should not exceed kmph
30. Maximum speed limit in foggy weather in absolute block system iskmph.
31. authority is issued in S/L token less instrument when it is failed.
32. 0000 code of engine whistle indicate
33. SLB is found instation.
34. SLB indicates commencement of
35. When distant signal showing double yellow, it indicates,..... or
36. Speed of "C" class ODC when view ahead is clear is
37. Round trip BPC of a coaching train is valid for Km.
38. Calling on signal may be placed below any other stop signal except
39. Tower wagon may be attached in rear of a goods train with the permission of
40. Where double distant signal is provided ,distant signal will show light in "ON" position.
41. "A" class BPC of a CC rake has validity of Days.
42. Check is to be done when goods train is to be cleared from a siding.
43. The speed of ARME while proceeding in block ticket isKmph.
44. The Goods warning board is applicable for both for&..... train.
45. Medical relief van shall be dispatched within minutes from double exit siding.
46. Maximum speed of a train after passing Automatic signal at on position is kmph.
47. Station limit is the portion of a Railway in single line automatic signaling section between.....
48. stations are non-block station.
49. Critical limit of wind velocity iskmph.

50. The distant signal shall be located at an adequate distance in rear of stop signal, the aspect of which it
51. Any station which cannot be worked under A, B, C or D class is termed as
52. At a "C" class station is the LSS.
53. A Gate stop signal shall be placed in rear of level crossing at a minimum distance of M MOMA signaling arrangement.
54. T/369 (3b) is issued as &
55. 0 0 0 0 0 hooters are sounded for ordering of
56. The TO, ASR means
57. BSLB is provided at such station where
58. authority is given to send a train into an obstructed block section.
59. Speed of 1st train intemporary single line working is
60. Speed of "A" class ODC is
61. BPC is given to long haul train.
62. GR is framed by and SR is framed by
63. Prescribed form no. of Caution order is
64. Guard working Rajdhani express exempted from
65. POH stands for
66. WGSCN stands for
67. Calling on signal shall showlight in "ON" position.
68. NBOBS wagons are having Discharge facility.
69. CMS stands for
70. Maximum speed of shunting is
71. If co-acting signal is defective then concerned signal will be treated as
72. Fog signal shall be placed at a distance of from the 1st stop signal.
73. The special instructions approved or prescribed by CRS are called
74. means the distance sufficient to ensure safety.
75. The speed of Tower wagon iskmph, when attached in rear of a goods train.
76. BOBRN wagon has discharge facility.
77. MFD stands for
78. In "B" class station is available.
79. WTT is issued in a year.
80. Form no. of BPC is
81. Calling on signal is a
82. Permanent caution order is published in
83. 4 times of blowing hooter is ordering of
84. Target time of the departure of ART in day time is
85. If a Guard will not exchange SIGNAL, he will be issued by SM of advance station.
86. ROH stands for
87. Shunt signal is a Signal.
88. Coaching train will start with% of beak power.
89. The ALP after coming to lobby will undergo test.
90. OPT/1/B is issued by
91. SOL means
92. Co-acting signal is a signal.
93. Shunt signal may be placed below all signals except
94. signals are denoted by "G" marker.
95. Level crossings protected with signals are called level crossings.
96. Speed over facing point in standard-II(R) interlocking is
97. Maximumpersons may be allowed on Motor Trolley at a time.
98. Block hut is a class station.
99. Normally fixed signals are erected at the side of track.
100. Passenger warning board is providedkm in rear of FSS/IBSS/GSS.

101. Target time of ART at night is
102. When IBSS post telephone is out of order, any train after waiting for 5" may pass withkmph
103. Interlocking are of types.
104. CBC stands for
105. Validity of premium BPC is
106. Ladies compartments will be marshaled
107. Fixed signal should show their aspect in normal position.
108. % of total number of cylinders should be fully operative on train on ghat section.
109. In case of defective head light of locomotive running in a section with refractive type of engineering fixed signal during night in BG speed of the train should not be more than.....
110. If Loco Pilot is incapacitate while the engine is motion, the ALP, if duly qualified may work the train upto next station at a speed not exceeding kmph.
111. Normal aspect of distant signal is
112. Hand brakes ofnumber of vehicles at each end are required to be pinned down, when a rake is stabled.
113. If automatic stop signal is defective the Loco Pilot, shall wait for min by night time at the foot of the signal and then proceed as per rule.
114. Coaches can be attached in rear of SLR of coaching train.
115. A coach with fire should be isolated from the other vehicles by at least
116. Level crossing gates that lie outermost stop signals of a station are
117. Sanctioning authority for "A" class ODC within division is
118. Semi-automatic signal is provided with
119. When an overrun line is blocked, it ceases to be a
120. Signal is denoted by "C" marker.
121. Conflicting signal shall be treated as
122. Notice stations are notified in
123. In case of defective headlight maximum speed of locomotive is.....kmph
124. To receive a train on to an obstructed line, the LocoPilot shall be given authority where there is no calling ON signal and signal post telephone.
125. To receive a train on to non signalled line, the Loco Pilot shall be given
126. The speed of a goods train while entering goods terminal yard is restricted tokmph.
127. I. B signal is identified by
128. Shunt signal below stop signal will show light in ON position.
129. Condition for taking off calling on signal is that the train has been brought to a.....at the stop signal.
130. Calling On signal shows _____ colour light in OFF' position.
131. When a colour light Distant is combined with LSS/Gate signal,.....marker shall be dispensed with on the signal post.
132. Distant signal is provided at a distance of meters in rear of the stop signal.
133. Wind velocity can be measured by
134. When colour light Distant signal is combined with Gate/LSS, the normal aspect of that signal is
135. Engine Whistle for Guard to come to Engine is
136. In case of train parting,guard shall show ----- by night.
137. During TIC on S/L, when line clear is obtained for more than one train,trains are run at an interval of ----minutes.
138. Authority to pass defective starter signal (if it is not LSS) is
139. The distance from Home signal to BSLB shall not be less than _____ metres
140. Fog signalman shall remain at FSP for a period of _____ hours on Main line section.

141. Authority to proceed in "one train only system" is -----.
142. When a train is held up at F S S for more than _____ minutes, the Loco Pilot shall depute Assistant Loco Pilot to go to Station.
143. When SM / Station Staff does not exchange "all-right" signals, the Loco Pilot shall give _____ engine whistle code.
144. When SM receives advice of Hot axle, that train shall preferably be admitted on _____ line.
145. In any case, there shall not be more than _____ officials/staff in other than engine crew at any time on the engine except in emergencies.
146. Maximum number of coaches attached in rear of SLR of Passenger or Mail & Express trains is _____.
147. The number of persons permitted to travel in the brake-van of goods trains, in addition to the Guard, should not exceed _____.
148. During T S L working the block instruments shall be kept and locked in _____ position.
149. During TIC on Double line, if no one from the station turns up within _____ minutes, Guard shall protect the train in rear and ALP may be sent to station.
150. The minimum equipment of fixed signals in automatic block system on single line shall be _____ and _____ signals
151. No person shall operate the electrical block instruments unless he holds a _____ issued by Principal/ ZRTI which shall be valid for a period of _____ years.
152. Stop indicator is located at _____ metres from the obstruction (work spot)
153. During TSL working Automatic Block System, the first train proceeding on right line when signal and communications are working shall proceed on _____ authorities.
154. If the night patrolman does not turn up even after _____ minutes beyond the scheduled arrival time, SM shall stop all the trains and issue caution order restricting the speed to _____ kmph.
155. is the normal authority to proceed on Single Line token less sections/Double line sections.
156. The time interval between two trains during signal and communication failure on D/L Automatic Block System shall be _____ minutes.
157. The minimum equipment of fixed signals in absolute block system on B- class two aspect single line shall be ____ & ____
158. Station working rules of non-interlocked station is signed by -----
159. During prolonged failure of signals in automatic section, ----- is issued to loco pilot.
160. Whenever new signal is placed, caution order is issued to loco pilot for ----- days.
161. Permission of ----- is required to work the material train in the night.
162. While attaching an engine to a passenger train, it shall be stopped ----- meters before the train.
163. To start the train from a line with common starter, ----- authority is issued.
164. There are ----- chapters in the book of gr and sr.
165. Train entering into sand hump is a ----- class of accident.
166. Record of caution order is kept for ----- months.
167. Speed over facing point in standard III(R) interlocking is kmph.
168. For Guard to apply brake whistle must be given by LP of the train.
169. must be issued during thick foggy weather.
170. The total number of vehicles with in-operative cylinders must be mentioned in, while starting a train.
171. At a class 'B' station with two Aspect signaling a Warner signal will be provided when the speed of train exceedkmph while passing through the station.
172. When inner distant signal is provided the distant signal shall have and aspects.
173. When shunt signal is defective, is the authority for the Loco Pilot to pass at 'ON'.
174. Authority to pass defective last stop signal on double line is automatic block system is
175. Whenever two distant signals are provided boards can be dispensed with.

176. Colour light distant signal is provided with Marker.
177. Neutral sections in electrified sections are notified in
178. will be the authority to proceed for Material Train working in shadow block.
179. In electrified section direction of nearest portable telephone socket is indicated on the
180. Train proceeding on wrong line in TSL working on double line shall switch onlight.
181. When head light is defective and marker lights are working the LP shall drive the train with speed not exceedingkmph upto the next station where it can be attended.
182. When relief engine is sent into the section the authority to proceed shall be on form no..... in ABS.
183. _____ 0 0 Code of whistle indicates
184. While passing automatic stop signal at 'ON' ALP will sound whistle.
185. Three long whistle means
186. Speed of 3rd train on TSL working on double line in ABS iskmph.
187. Authority given during total interruption of communication in double line is _____ .
188. When Adv. Starter fails in D/L, ATP is
189.types of system of workings are available over Indian Railways.
190. In case of failure of motor operated point clamping and is required.
191. Home signal of intermediate block post is provided with marker.
192. From a roadside station, minimum % of BP required in goods train is.....
193. Loss of Railway property exceeding more than Rs..... Is one of the factors of serious accident.
194. The total number of persons that is allowed in the brakevan of a goods train besides the Guard shall be
195. LP can pass Gate Stop signal at 'ON' by stopping minutes in night.
196. Speed of B class ODC is
197. Explosion is a Class accident.
198. Maximum number of train that can be allowed between two stations under following train system is.....
199. & engineering boards are provided in vulnerable location during monsoon.
200. Whistle code for defective signal is.....
201. When train on block ticket met with an accident protection in rear will be
202. Speed of Motor Trolley during night shall not exceed.....
203. Maximum Number of TT machine can be allowed in the section for block.
204. is the number of Wagon way bill/Vehicle Guidance.
205. authority given by Guard to clear the 1st portion of the parted train form the block section.
206. Rake link is given in
207. Prescribed form number of TT Machine Permit is
208. Normal aspect of Repeating signal is
209. In case of Alarm Chain pulling or Pressure trouble Driver should blowwhistle.
210. Derailing switch can be used as
211. Form No-..... Is maintained by SM at the station to record the caution orders.
212. Obstruction danger signal is given by.....
213. Submission of accident report on form no.
214. Accident are divided into classes.
215. VTO in MACLS is placed at either side from the centre of the station building at a distance of
216. A goods train with partial pressure can only be started with the permission of
217. Block back is to be taken for conducting shunting beyond.... in Automatic Block Signalling section D/L.
218. Prescribed form number of Nil caution order is
219. The shortest section of OHE which is required manual operation is called.....
220. No tension in OHE for 5 minutes is classified as..... class accident.

Answer Key:

Q.1	Ans: 5 kmph	Q.2	Ans:CRS	Q.3	Ans:In rear of train engine
Q.4	Ans:A	Q.5	Ans: Temporary fixed danger signal	Q.6	Ans:180
Q.7	Ans:45 m	Q.8	Ans:15/10 kmph	Q.9	Ans:Special class
Q.10	Ans:5	Q.11	Ans:3	Q.12	Ans:25 kmph
Q.13	Ans:Proceed (Green)	Q.14	Ans:40/15 kmph	Q.15	Ans:Not more than 30 kmph
Q.16	Ans:25 kmph	Q.17	Ans:Shunting	Q.18	Ans:B
Q.19	Ans:7	Q.20	Ans:G	Q.21	Ans:H
Q.22	Ans:10	Q.23	Ans:LSS and GSS	Q.24	Ans:Station
Q.25	Ans:Block	Q.26	Ans:2	Q.27	Ans:180m
Q.28	Ans:Controls	Q.29	Ans:25	Q.30	Ans:60
Q.31	Ans:PLCT	Q.32	Ans:Protect train in rear	Q.33	Ans:B class single line
Q.34	Ans:Station	Q.35	Ans:Loop line stoppage, loop line through, main line stoppage	Q.36	Ans:25
Q.37	Ans:3500 km	Q.38	Ans:Last stop signal	Q.39	Ans:CHC
Q.40	Ans:Y (Caution)	Q.41	Ans:7500km or 35 days	Q.42	Ans:GDR
Q.43	Ans:15/10 Kmph	Q.44	Ans:Passenger& Goods	Q.45	Ans:15
Q.46	Ans:15	Q.47	Ans: Between UP & DN FSS	Q.48	Ans:D-Class
Q.49	Ans:72	Q.50	Ans:it pre warns	Q.51	Ans:Special Class
Q.52	Ans:Home signal	Q.53	Ans:180 m	Q.54	Ans:Pilot in , Pilot out
Q.55	Ans:ARME+ART	Q.56	Ans:As soon as ready	Q.57	Ans:1 st point is trailing or no point
Q.58	Ans:T/A 602, T/C 912	Q.59	Ans:25	Q.60	Ans:Sectional speed
Q.61	Ans:Cover	Q.62	Ans:Government of India, Authorised officer	Q.63	Ans:T/409
Q.64	Ans:Exchange of alright signal with station staff	Q.65	Ans:Periodical over haul	Q.66	Ans:
Q.67	Ans:No	Q.68	Ans:Side	Q.69	Ans:Crew management system
Q.70	Ans:15 kmph	Q.71	Ans:Defective	Q.72	Ans:270 m
Q.73	Ans:Approved special instruction	Q.74	Ans:Adequate distance	Q.75	Ans:40
Q.76	Ans:Bottom	Q.77	Ans:MachinenFebrikenDautc hland	Q.78	Ans:Station section

Q.79	Ans:Once	Q.80	Ans:MV-5	Q.81	Ans:Subsidiary signal
Q.82	Ans:WTT	Q.83	Ans:Crane	Q.84	Ans:30 min
Q.85	Ans:Warning memo	Q.86	Ans:Routine Overhaul	Q.87	Ans:Subsidiary
Q.88	Ans:100	Q.88	Ans:Breathlyser	Q.89	Ans:
Q.90	Ans : Principal/ZRTI	Q.91	Ans: Signal overlap	Q.92	Ans: Subsidiary
Q.93	Ans : FSS	Q.94	Ans : Gate stop signal	Q.95	Ans : Interlocked
Q.96	Ans : 110 kmph	Q.97	Ans : 8	Q.98	Ans :C
Q.99	Ans : Left	Q.100	Ans :1 km	Q.101	Ans :45
Q.102	Ans : 15/8	Q.103	Ans : Two	Q.104	Ans : Centre buffer coupler
Q.105	Ans : 12 days	Q.106	Ans : Near SLR	Q.107	Ans : Most restrictive aspect
Q.108	Ans : 100%	Q.109	Ans : 20 kmph	Q.110	Ans : 25 kmph
Q.111	Ans : Y (caution)	Q.112	Ans : Six	Q.113	Ans : Two
Q.114	Ans : Two	Q.115	Ans : 45	Q.116	Ans : Engineering LC gate
Q.117	Ans : DRM	Q.118	Ans : Illuminated A	Q.119	Ans : SOL
Q.120	Ans : Calling ON	Q.121	Ans : Defective	Q.122	Ans : WTT
Q.123	Ans : 25	Q.124	Ans : T/509	Q.125	Ans : T/509
Q.126	Ans : 10	Q.127	Ans : IB marker	Q.128	Ans : NO
Q.129	Ans : Stop	Q.130	Ans : Yellow	Q.131	Ans : "P"
Q.132	Ans : 1000	Q.133	Ans:Anemometer	Q.134	Ans: Stop(R)
Q.135	Ans:_ _ 0 0 (Two long two short)	Q.136	Ans:White	Q.137	Ans:30
Q.138	Ans:T/369(3b)	Q.139	Ans:180m	Q.140	Ans:Three
Q.141	Ans:Metallic Badge	Q.142	Ans:Ten	Q.143	Ans:Two short (0 0)
Q.144	Ans:Main	Q.145	Ans:Three	Q.146	Ans:Two
Q.147	Ans:Five	Q.148	Ans:TOL	Q.149	Ans:Ten
Q.150	Ans:Home,Starer auto signal in rear of home signal	Q.151	Ans:Competency	Q.152	Ans:30 m
Q.153	Ans:PLCT+T/A 912 & C/O	Q.154	Ans:15 min	Q.155	Ans:Taking off
Q.156	Ans:15 min	Q.157	Ans:Outer& Home	Q.158	Ans:Sr. DOM/DOM & SR.DEN/DEN
Q.159.	Ans:T/D 912	Q.160	Ans:90	Q.161	Ans:DRM
Q.162	Ans:20	Q.163	Ans:T/512	Q.164	Ans:18
Q.165	Ans:G	Q.166	Ans:12 (Twelve)	Q.167	Ans:140
Q.168	Ans:0 0 0 0 (Four short)	Q.169	Ans:Caution order	Q.170	Ans:BPC

Q.171	Ans:50	Q.172	Ans:YY (attention) ,G (Proceed)	Q.173	Ans:T/369 (3b)
Q.174	Ans:T/A 912	Q.175	Ans:Goods warning	Q.176	Ans:'P'
Q.177	Ans:WTT	Q.178	Ans:Block Ticket	Q.179	Ans:WTT
Q.180	Ans:Flasher	Q.181	Ans:40	Q.182	Ans:T/A 602 or T/C 912
Q.183	Ans:Call for guard to come to engine	Q.184	Ans: _ (One long)	Q.185	Ans:Fouling not clear
Q.186	Ans:Normal	Q.187	Ans:T/C 602	Q.188	Ans:T/369 (3b) with PN
Q.189	Ans:Six	Q.190	Ans:Pad lock	Q.191	Ans:' IB '
Q.192	Ans:70%	Q.193	Ans:Two	Q.194	Ans:Five
Q.195	Ans:Two	Q.196	Ans:40/25/15	Q.197	Ans:N
Q.198	Ans:5 (five)	Q.199	Ans:C& T	Q.200	Ans:_ 0 0 (One long two short)
Q.201	Ans:250-250-10	Q.202	Ans:30 kmph	Q.203	Ans:Any number
Q.204	Ans:OPT/437	Q.205	Ans:T/609	Q.206	Ans:WTT
Q.207	Ans:T/465	Q.208	Ans:Caution (Y)	Q.209	Ans:0 0 _ (Two short one long)
Q.210	Ans:SOL	Q.211	Ans:T/469	Q.212	Ans:Loco pilot
Q.213	Ans:GA-3	Q.214	Ans:16 (sixteen)	Q.215	Ans:180m
Q.216	Ans:DRM	Q.217	Ans: Outermost point	Q.218	Ans:T/A-409
Q.219	Ans: Elementary Section	Q.220	Ans:Class L		

Maximum permissible speed of different types of Wagons over SER

Reference: EL/OPTG/SFY-1/Gen. Dtd 17/08/2020.

It should be noted that the speeds mentioned below are subject to:

1. any lower sectional speeds mentioned for specific section if any.
2. any lower temporary or permanent speed restriction imposed in any section;
3. any lower speed sanctioned for specific locomotive hauling the train;

Srl. No.	Stock	MPS	
		Loaded	Empty
1	BOXN (E)	---	80
2	BOXN (CC)	75	80
3	BOXN (CC+6+2)	60	80
4	58 BOXNM1 (CC+6+2)	70	80
5	58 BOXN (CC+8+2)	60	75
		60	80
6	BOXNHS (CC)	100	100
7	58 BOXNHL (CC+8+2)	60	100
8	BOXNHA (CC)	75	100
9	58 BOXNHA (CC+8+2)	60	90
10	58 BOXNHAM (CC+8+2)	60	90
11	58 BOXNLWM1 (CC+6+2)	60	65
12	58 BOXNLWM1 (CC+8+2)	60	65
13	BOXNEL (25T)	45	60
		40	40
		45	60
14	BCN (CC)	65	80
		75	
15	BCNM1 (CC+6+2)	60	80
16	BCNAM1 (CC+6+2)	60	80
17	43 BCNAM1 (CC+8+2)	60	80
18	BCNAHS (CC)	75	100
19	BCNAHSM1 (CC+6+2)	60	65
20	43 BCNAHSM1 (CC+8+2)	60	100
21	BRN (CC)	65	65
22	BRNAHS	75	100
23	BOBRM1 (CC+6+2)	70	75
24	BOBRN (CC+6+2)	60	65
25	BOBRNM1 (CC+6+2)	70	80
26	45 BOST max. Axle load 20.32t	75	80
27	BOST (CC+6+2)	60	80
28	45 BOSTHS	75	80
29	BOSTHSM1 (CC+6+2)	60	80
30	45 BOSTHSM2(CC+6+2)	60	85

31	BVZC (4 Wheeler)	100	
32	BVZI (8 Wheeler)	100	
33	BLC	100	
34	BOBS MK-II	60	75
35	BOBSNM1 (25T)	45	60
36	BOBY(CC)	65	65
37	BOBYN (CC+6+2)	60	75
38	BFNS (CC)	75	100
39	BFNS 22.9t	60	60
40	BFNSM 22.9t	60	60
41	BOY Derated (CC)	65	65
42	BCBFG	60	60
43	BWTB	65	65
44	140T Break down Crane	100	
45	BCACM 9 units Rake (2+3)	65	65
46	BCACBM 9 units Rake (2+7)	65	65
		50	50
47	BTPGLN	75	80
48	BRSTN	70	70
	BOMN	70	70
49	BLLA/BLLB 18.8t	100	100
50	BLAN/BLBN 916.75t axle load)	75	75
51	BRH 20.32t	75	75
52	BFAT	25	40
53	BCCN	100	100
54	BCCNR	100	100
55	BRHNEHS	65	65
56	Accident Relief Train (SPART)	105	
57	Rail Grinding Machine Model RGI 72	50 on its own power	65 in train formation
58	BCL (8-axle Bogie Wagon) [Rake Combination i) 10 BOXN + 1 BCL + 5 BOXN + 1 BCL + 5 BOXN + 1 BCL + 30 BOXN + 1 Bk. Van, ii) 10 BCN + 1 BCL + 5 BCN + 1 BCL + 5 BCN + 1 BCL + 16 BCN + 1 Bk. Van	40	40
59	22 BCLA	40	40
60	58 BCFC	60	65
61	BTAP 20.32t	65	65