

South Eastern Railway

Office of the
Sr. Divl. Personnel Officer
S.E. Railway, Kharagpur

No. SER/P-KGP/EN/260/10/EN/Instructor (Sig.)/syllabus/25
To
The Sr. DSTE(Co-ord.)
S.E. Railway, Kharagpur

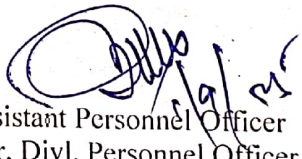
Date: 01.09.2025

Sub: Approved uniform syllabus for the post of Senior Instructor (Sig.) in Pay Level-7 (7th CPC) & Jr. Instructor (Sig.) in Pay Level-6 (7th CPC) in S&T Department of Kharagpur Division.
Ref: PCPO/GRC's letter No. SER/P-HQ/EN/Instructor (Signal)/syllabus dated 29.08.2025.

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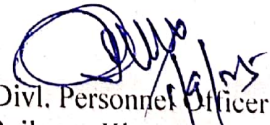
Enclosed please find the copy of PCPO/GRC's letter cited under reference regarding syllabus for selection to the post of Senior Instructor (Signal) in Pay Level-7 (7th CPC) & Jr. Instructor (Signal) in Pay Level-6 (7th CPC) in S&T Department of Kharagpur Division.

This is for your information and wide circulation amongst all the eligible staff of this Division so as to enable all the probable candidates to prepare themselves for the forthcoming examination.


Assistant Personnel Officer
for Sr. Divl. Personnel Officer
S.E. Railway, Kharagpur
Date: 01.09.2025

No. SER/P-KGP/EN/260/10/Instructor(sig.)

Copy to Ch. OS/IT cell/Sr. DPO Office/KGP for uploading the same on Divisional Website.


for Sr. Divl. Personnel Officer
S.E. Railway, Kharagpur

दक्षिणपूर्बरलवे / South Eastern Railway

मुख्यालय/ Headquarters:
कार्मिकविभाग / Personnel Department
गार्डेनरीच, कोलकाता - ७०००४३
Garden Reach, Kolkata - 700043

NO: SER/P-HQ/EN/Instructor (Signal)/Syllabus

Date: 29.08.2025

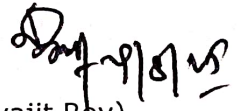
To
The Sr. Div. Personnel Officers
(ADA/CKP/KGP/RNC)
South Eastern Railway

Sub: Approved uniform syllabus for the Ex-Cadre post of Sr. Instructor (Signal) in Level-7 & Jr. Instructor (Signal) in Level-6 in S&T Dept. over S.E. Railway.

In order to Standardize the Syllabus for conducting the Selection through CCBT, the syllabus as enclosed has been prepared for probable candidates of the category of Ex-Cadre post Sr. Instructor (Signal) in Level-7 and Jr. Instructor (Signal) in Level-6 in S&T Dept. over South Eastern Railway. This may be circulated to all concerned so as to enable all the probable candidates to prepare themselves for the forthcoming examinations.

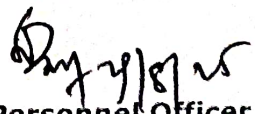
You are therefore requested for the wide circulation of the same and it is also available on the website- www.ser.indianrailways.gov.in .

Encl: - As above.


(Satyajit Roy)
Asstt. Personnel Officer (HQ)
for **Pr. Chief Personnel Officer**

Copy forwarded for information to the: -

1. Secy. to GM for kind information of GM
2. PS to PCSTE for kind information of PCSTE
3. PS to PCPO for kind information of PCPO
4. CSE/CSTE(Proj)/CPO(A)
5. Dy. CSTE(Proj)/Dy. CPO(HQ)
6. Sr. DSTE (ADA/CKP/KGP/RNC)
7. SSTE/HQ/GRC
8. APO(HRMS)/APO(Ruling)
9. OS/HRMS-for uploading in the Railway website


for **Pr. Chief Personnel Officer**

SYLLABUS FOR SELECTION TO THE POST OF INSTRUCTORS (SIGNAL).

SSE & JE SIGNAL IN S&T DEPARTMENT.

I. SIGNALLING IN GENERAL

1. Basic concept of Signalling, Types of signals, Principles of interlocking, preparation of Signal Interlocking Plans, Route holding principles, Table of Control, Numbering.
2. Colour light signal concepts, signalling elements – Relays, various types of signals and their use.
3. Isolation: classification of stations and standards of interlocking, means of isolation, overlaps and humps etc. Braking distance.
4. Selection Circuits and RDSO Approved control table. Principles of slotting etc.
5. Relay interlocking concepts, metal to carbon and metal to metal relays. Panel interlocking
6. Colour light signals and lamp proving arrangements.
7. Points and Layouts, Facing & Trailing points, Turnouts etc.

II. ELECTRICAL SIGNALING.

1. LED Signals and different aspects advantages, regulators and their operating parameters etc
2. DC and AC Track circuits, their components and use of AC and DC track circuits and their adjustments.
3. Axle counter, SSDAC, HASDAC & MSDAC and their applications.
4. Electric key transmitter. Lever lock circuit controllers, KLCR.
5. Signalling cables, power cables, wire coils etc.
6. Electric point machines and their working. Thick Web Switch lay outs, point and crossovers etc.
7. Route relay Interlocking - Siemens, British (RRI). Sub Route release, Sectional route release, etc.
8. Earthing, lightning and surge protection arrangements for signalling equipment.
9. Earth Leakage Detectors.
10. Data loggers and Salient features, Front end processors, Networking managements of Datalogger.
11. Execution of S&T Infrastructures works, CRS Sanction, Documentation, Testing and commissioning.

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III. BLOCK SIGNALLING.

1. Principles of Block working, SGE Double line Block Instrument.
2. Daido Block Instrument, Block clearance circuits etc.
3. UFSBI working with block proving axle counters - Single line/Double line.
4. Intermediate Block Signalling working principles etc

IV. MODERN SIGNALLING

1. Electronic interlocking, EI Principles. Configuration, Interface Logic, Application Logic, VDU Concept, FAT, SAT, Square sheet Testing etc, Technical System Application Approval, RDSO TAN.
2. KAVACH (Train collision Avoidance system): Overview, system of working, components of Kavach, RFID, locomotive component etc
3. Automatic Block Signalling (ABS) - Single line, Double line. Advantages, Semi-automatic signals. Various schemes for ABS implementation. Failure attention in ABS territory.
4. UFSBI with Block proving axle counters.
5. Train warning system (TWS), Automatic warning system (AWS), European train control system (ETCS). Centralized traffic control (CTS), Train management system (TMS).
6. Automatic Fire Detection & Alarm System, Automatic Fire Suppression Systems.

V. POWER SUPPLY

1. IPS (Integrated power supply), SMPS, Rectifiers, Transformers, DC-DC Converters.
2. Batteries, LMLA Cells, VRLA Cells. Initial charging of cells, Retentivity test.
3. Generators and their maintenance, CLS Panels. AT supply to signalling equipment etc.

VI. LEVEL CROSSING GATES

1. Classification of gates, manned, unmanned, communication arrangements etc.
2. Mechanically operated lifting barriers and wire and rod transmission for operation of MOLB.
3. Electrically operated lifting barriers and their operating characteristics etc.
4. Sliding booms and interlocking, road signals, hooters, warnings etc.

VII. SIGNALLING in 25KV ELECTRIFICATION

1. Signalling Installations in RE area. Infringement of signals, Implantation of OHE masts.
2. Electric clearance, visibility, Induction effects return current etc.

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3. Installations of cables in RE area and earthing of equipments.
4. Single Rail track circuit installation, Track Bonding etc
5. Block signalling in RE area and protection of staff

VIII. SOTRES/FINANCIAL RULES/ESTABLISHMENT MATTERS.

1. Imprest stores consumable stores-dead stock tools and plants maintenance of stores registers-return of stores preparation of indents, loss and theft of stores, stock verification, Vigilance etc.
2. Canons of Financial Propriety, Railway Budget, Demand of grants, Classification of expenditure, Responsibility Accounting, work programme, financial control on stores, Government e-Market (GeM), etc.
3. HOER hours of work and period rules' Trade test, Leave Rules, Pass Rules, Advances in Railways.
4. Railway servants (Discipline & Appeal) Rules, 1968 and related instructions. The Railway Service (Conduct) Rules, 1966 and related instructions. Retirement benefits, qualifying service, pension, family pension, commutation gratuity, New Pension Scheme. Staff welfare, SBF, Railway Institutes, EX-Gratia payment.
5. Workmen compensation Act.
6. Payment wages Act.

IX. OFFICIAL LANGUAGE

Official Language policy, Act, Rules, Incentives Schemes etc. and Rules. Rajyabasha.

X. CODES & MANUAL

General and Subsidiary rules (G&SR), Signal Engineering Manual (SEM) & Schedule of Dimensions (SOD), Block working Manual, Accident Manual etc.

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