

NORTH CENTRAL RAILWAY

No.797-E/Gaz/Gr. 'B' Sele./CBT-Spl/Eng./30%/NCR

Headquarters Office,
Prayagraj-211015.
Dated: 21.03.2024.

Principal Chief Engineer,

CAO/Const, AGM, SDGM,GM/CORE, PFA, CTE, CPDE, CBE, CE/SD, CE/HQ, CE/P&D,CE/TMC,CE/TS,CE/Works, CE/G,CE/RSW, CE/C/North, CE/C/HQ, CPM(Const):PRYG, AGC, JHS, CPM/GSU/AGC, FA&CAO/C, CWMs:JHSRCNK/JHS& STLI Workshop& CPOH, DRMs: PRYJ, AGC & JHS, Sr. DENs/Co, Sr. DPOs, Sr. DSOs, Sr. EDPMs: PRYJ, AGC & JHS, Dy.CE/Consts: PRYJ, CNB, AGC & JHS,Dy.CEs: CSP/SFG, CPOH/SFG, TMC/L/PRYJ, AGC & JHS &Brigde/Line/PRYJ, AGC & JHS, Dy. CPOs: HQGaz, IR & Const., SPO/Gaz, APO/HQ, Dy.CVO/Engg., Dy.CSO/Engg., DENs/XENs: PRYJ, AGC & JHS ADENs/AXENs: PRYJ, AGC & JHS, Principals: IRTMTC/PRYJ, ETC/CNB, CETA/CNB & STC/JHS, Sr. Statistical Officer/NCR, LO/NCR.

NOTIFICATION

Sub: Selection for promotion from Gr. C to Gr B post over NCR through Centralized Computer Based Objective Type Examination (CBT)-Special Drive to fill up the vacancies to the post of AEN/AXEN against 30% LDCE in Civil Engineering Department in Pay Matrix Level-8.

Ref: Railway Board's letter No. E(GP)2022/2/4 dated 14.12.2023& 14.03.2024.

1. As advised by Railway Board vide letters referred above, it is proposed to conduct selection for the Group 'B' post of AEN/AXEN against 30% LDCE in Pay Matrix Level-8 through Centralized Computer Based Objective Type Examination (CBT)-Special Drive conducted by National Academy of Indian Railways (NAIR)/BRC. Written examination (CBT)-against 30% LDCE is scheduled to be conducted on **23.06.2024** (tentative) by NAIR/BRC.

The break-up of vacancies assessed are as under:-

Mode	UR	SC	ST	Total
30% LDCE	03	01	01	05

Instructions regarding reservation with benchmark disabilities (PwBDs) issued by DoPT vide their letter OM No. 36012/1/2020-Estt. (Res.-II) dated 17.05.2022 circulated by Railway Board vide letter no E(GP)2022/2/20 dated 18.08.2022 is being followed in the selection/LDCEs.

2. Eligibility:-

The scheme is open to Non-ministrial (Technical) staff of Civil Engineering Department working in Pay Band PB-2 Rs 9300-34800 +GP Rs 4200/- (present Level 6 of 7th CPC). In terms of Railway Board's letter no E(GP)2019/2/25 dated 27.12.2019 (RBE no 216/2019), for Gr. B selection 30% LDCE quota, Gr.C employees working in level 6 and above in Pay Matrix with 05 (five) years of non-fortuitous service in level 6 and above in Pay Matrix (including non-fortuitous service rendered in the corresponding pre-revised grade pay) will be eligible.

In case of employees, whose appointment were subject to completion of satisfactory training against the post they were so appointed, the length of service should be reckoned including the training period prescribed.

In terms of Board's letter No. E(GP)2022/2/4 dated 14.12.2023, the cut-off date for assessment of eligibility of candidates of this extra round of examination(Special Drive) shall be retained as 01.01.2023.

The eligible employees should submit their applications duly forwarded by immediate supervisor/officer through proper channel in their respective office in the prescribed proforma (**Annex.-'A'**) enclosed (in triplicate) on or before **05/04/2024** and acknowledgement to this effect may be obtained. It is mandatory to fill each and every column with correct information. Applications received after **05/04/2024** should not be entertained and summarily rejected. If no application is received by the office concerned, a certificate should be given to the Personnel department of HQ/Division/Workshop/Unit concerned that no application has been received in their office.

The applications received by the respective office may be sent to the Personnel Department of HQ/Division/Workshops/Units by **10/04/2024** retaining one copy of application in their office for record.

Applications received after **10/04/2024** should not be entertained by the Personnel Department of respective HQ/Division/ Workshop/Unit concerned.

3. SCRUTINY

The Personnel Department of the HQ/Division/Workshops/Units will arrange to register the applications received indicating names of the employees of each office who have applied for the selection. The Personnel Officer/Officer in-charge of Establishment of the HQ/Division/Workshops/Units should scrutinize the applications and verify the eligibility as per the Service record maintained by them and certify their eligibility or otherwise in the application of each candidate. After scrutinizing the applications, the HQ/Division/Workshops /Units should forward **the list of eligible candidates only, repeat, eligible candidates only** in the enclosed proforma (**Annex.-'B'**) alongwith the applications. One copy of application of each employee will be retained in the HQ/Division/Workshops/Units and one copy should be forwarded to Personnel Department of HQ office per bearer alongwith covering letter so as to reach Dy. CPO/Gaz./NCR/HQ/PRYJ on or before **17.04.2024**. Under no circumstances, applications will be accepted after the due date. While forwarding the applications, Dy. CPO/ Sr.DPO/ DPO /SPO/APO/Establishment officers should certify that no applications is left out with them. List of the eligible candidates in Annex. 'B' may also be provided in soft copy in excel sheet, repeat, provided in soft copy in excel sheet as well as through email at : gaztrgncr@gmail.com.

Similar exercise as mentioned in Para above should be done by the Dy. CPO/HQ &APO/HQ in respect of the staff of HQ office.

In case a candidate is found ineligible for the above selection at any stage, his/her candidature will be summarily rejected. It may be ensured that the applications of candidates working under Construction Organization should be submitted through Dy.CPO/Const./NCR/HQ/PRYJ.

4. Pre-Selection Training to SC/ST employees:

All the eligible SC/ST candidates are required to be given pre-selection coaching/training as per syllabus attached as **Annexure 'C'** to be organised by the Divisions/Sr.DENs, DENs, ADENs concerned as per extant instructions contained in Railway Board's letter No. E(GP)2010/2/39 dated 28.08.2019 (RBE No. 142/2019). Sr.DENs, DENs, ADENs Officers in charges will be personally responsible to spare the staff for pre-selection coaching/training well in time. The eligible SC/ST candidates working in the Headquarters Office & PU should be attached with Prayagraj Division and Construction Units should be attached with adjacent Divisions for pre selection Coaching/Training.

Training may be imparted to SC/ST candidates who are found eligible for appearing in the selection by the Divisions/Workshops/Units. In case any SC/ST candidate is not interested for pre-selection Coaching/Training his/her written refusal may be obtained and sent to this office in original through special messenger, alongwith the training completion reports (**Annexure 'D'**).

On completion of the Coaching/Training, a certificate to this effect and schedule of pre-selection coaching containing date, time, venue, name of the lecturer, topics / subjects & attendance sheet of eligible SC/ST employees must be sent to this office in proforma enclosed herewith as **Annexure 'D'**.

5. Syllabus:

A copy of the syllabus for 30%(LDCE) selection for promotion to Group 'B' posts of AEN/AXEN in Civil Engineering Department, circulated by Railway Board vide letter E(GP)2022/2/4 dated 07.11.2022 is attached as **Annexure-'C'**.

6. SCHEME OF EXAMINATION

In terms of Railway Board's letter No. E(GP)2022/2/4 dated 28.06.2022& 06.09.2022, the examination through CBT shall be comprise of one paper as per following details:-

Single paper of 150 marks comprising 100% Objective type Multiple Choice Questions with following distribution of marks:

Topic	Questions	Marks
Technical(Professional)subject	85 Questions (includes 5 optional questions)	: 80 marks
General Knowledge & official language policy & Rules	55 Questions (includes 15 optional questions on official languages Policy & Rules)	: 40 marks
Establishment& Financial Rules	35 Questions (includes 5 optional questions)	: 30 marks
Qualifying Marks	: 90	
Duration	: 3 Hours	

Question paper will have 175 questions out of which 150 questions are to be attempted.

1 mark will be allotted for every correct answer. There shall be negative marking for incorrect answers and 1/3rd of marks allotted for each question will be deducted for every wrong answer.

7. **Written (CBT) and Viva-voce:**

The selection will comprise of Written Test followed by Viva-Voce test. Only those who qualify in the Written Test and pass the prescribed standard of medical examination as detailed in Railway Board's letters No. E(GP)80/2/8 dated 31/10/91, letter No. 99/H/5/3 dated 21.05.1999& 18.12.2000 will be called for the Viva-Voce test. In this regard, provisions laid down in paras 529 and 530 read with para 503 of IRMM/Volume-I, 3rd Edition 2000, are relevant.

Sr. DPOs, Dy. CPOs, DPOs, SPOs, APOs & controlling officers of the employees may personally ensure that this notification has been given wide publicity to all concerned. Displaying of this notification in the prominent Notice Boards of the respective offices of HQ/Divisions/Workshops/Units may also be ensured.

The time line for conducting the selection (CBT) against 30% LDCE vacancies is as under:-

Last date of submission of application by the applicant in their respective office	Submission of application at concerned Personnel Branch	Submission of application in HQs office	Issue of final eligibility list	Receipt of report of completion of pre-selection coaching to SC candidates	Tentative Date of written examination (CBT)
05.04.24	10.04.24	17.04.24	02.05.24	24.05.24	23.06.24

The notification is also available on this Railway's website – www.ncr.indianrailways.gov.in
(About us → Department → Personnel → NCR Gazetted Section → CBT)

Receipt of this notification may please be acknowledged.

Hindi version will follow.

DA: As above


(Iftikhar Ahmad Khan)
SPO/Gaz
for General Manager (P)

Copy forwarded for kind information to:-

1. Secy. to GM
2. Secy., Estt. (GP), Railway Board, New Delhi
3. Secy. to PCE, PS-I to PCE. CPRO
4. PCPO, CPO/Admn, CPO/IR
5. PCMD, CMSS: PRYJ, AGC, JHS & CNB

Annexure –‘A’

Application for selection to the post of AEN/ADEN (Gr. –‘B’) against 30% LDCE quota for
Civil Engineering Department for Special Drive

Ref: No.797-E/Gaz/Gr. ‘B’ Sele./CBT-Spl/Eng./30%/NCR dated 21.03.2024

(It is mandatory to fill each and every column with correct information)

1.	Name (in block letters):.....			
2.	Father's Name:.....			
3.	I PASS number (11 digit employee ID):.....			
4.	HRMS ID:.....		5.	Designation:.....
6.	Mobile No	7.	e-mail ID :.....
8.	Place of posting:.....		9.	Division/workshop/unit:.....
10.	Controlling officer:.....		11.	DOB(DD/MM/YYYY):.....
12.	Community(UR/SC/ST):.....		13.	Whether a PwBD (Yes/No) :.....
14.	Date of initial appointment	Designation	Grade / Level	Railway / Division / Unit
15.	Lien holding Railway :		16	Department :
Details of service: (MACP dates not required, write date of regular promotion in the corresponding Grade / Level):-				
17	a)	Date of promotion/appointment in Level-6 (7 th CPC) / PB-2, ₹. 9300-34800, GP ₹. 4200/-(6 th CPC) :		
	b)	Length of non-fortuitous service in Level-6 (7 th CPC) / PB-2, ₹. 9300-34800, GP ₹. 4200/-(6 th CPC) as on 01.01.2023 :Years.....Months.....Days		
	c)	Date of promotion/appointment in Level-7 (7 th CPC) / PB-2, ₹. 9300-34800, GP ₹. 4600/-(6 th CPC) :		
	d)	Length of non-fortuitous service in Level-7 (7 th CPC) / PB-2, ₹. 9300-34800, GP ₹. 4600/-(6 th CPC) as on 01.01.2023 : Years MonthsDays		
	e)	If you transfer from other Railway either on own request or Mutual basis, please filled up the followings:-		
	Mode of Transfer Own Request/Mutual	Transfer from which Railway with date	Date of joining in NCR	Name of Post
				Grade/Level
18	f) In case of Medically de-categorised personnel, please write and date of joining / promotion in Level-6 (7 th CPC) / PB-2, ₹. 9300-34800, GP ₹. 4200/-(6 th CPC) :			
	PwBD categories (candidates claiming relaxation under PwBD categories should fill up the followings), if Yes, in Column 13			
	PwBD categories (write a, b, c, d & e)	Percentage of disability	Disability certificate no.	Valid upto
	Do you want to avail the service of scribe : (Yes / No) :			

(Signature of the employee with date)

Name:

P.T.O

19	I hereby declare that I am eligible and all the information given in this application are true, complete & correct to the best of my knowledge and belief. I understand that in the event of any information given herein, if found false or incorrect or concealed, my candidature will liable to be terminated and D&AR action can be taken against me for this.
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Affix recent
passport size colour
photograph of the
employee duly

(Signature of the employee with date)
Name: _____

-----X-----X-----X-----X-----X-----X-----
Signature with date of the immediate supervisor forwarding application of **eligible candidate** only :

Office Seal :

Forwarded to Controlling officer

Signature of Controlling officer
with date & office seal

-----X-----X-----X-----X-----X-----X-----

Forwarded to Headquarter office

Forwarded to Dy. CPO/Gaz/NCR/HQ/PRYJ, Mandakini Building, 'G' Block, Subedarganj, Prayagraj.
The particulars given by the employee in this application have been scrutinized and found correct as per Service Record & the above named employee is eligible, repeat, is eligible to appear for selection to the Post of AEN/AXEN against 30% LDCE & it is certified that no ad hoc or fortuitous service has been taken into account for computing the eligibility as on 01.01.2023. In case of any variation in the service particulars this office shall be held responsible.

Signature & name with official seal of
the Controlling Officer i.e. Personnel
Officer of respective
Division/Workshops/Units

Annexure -'B'

PROFORMA OF CONSOLIDATED STATEMENT FOR FORWARDING THE APPLICATION OF ELIGIBLE CANDIDATES ONLY FOR SELECTION TO THE POST OF AEN/AXEN (GROUP 'B') AGAINST 30% LDCE FOR CIVIL ENGINEERING DEPARTMENT THROUGH SPECIAL DRIVE

SN	Name (S/Shri)	Father's name	I PASS number (11 digit employee ID)	HRMS ID	Designation	Mobile No.	e-mail ID	Place of posting	Division/w orkshop/u nit	Controlling officer	DOB (DD/MM/Y YYY)	Community (UR/SC/ST)	Whether belongs to PwBD category (Yes/No)	If yes, PwBD category	Whether PwBD entitled scribe (Yes/No)
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]

Note: I-PAS (Column-4) should be of 11 digits. In case the employee ID is less than 11 digits, equal number of zeros may be pre-fixed to make it 11 digit.

Signature of Personnel officer/
Controlling officer (with date & office seal)

Name:

Designation:

**SYLLABUS FOR 30% LDCE FOR PROMOTION TO GR.B POST OF AEN IN CIVIL
ENGINEERING DEPARTMENT**

(A) Civil Engineering (General)

1. Surveying

a. Types

i. Surveying basics

Basic principles; base lines; check lines: perpendicular and oblique offsets; conventional signs; plotting of survey; true and magnetic bearings; open and closed traverses; recording plotting of traverse, closing errors.

ii. Surveying equipment

Auto level, Total station, DGPS, LIDAR.

iii. Leveling –

Level Lines - datum, bench marks, simple leveling, fly leveling; recording the levels in field book; method of reducing levels; arithmetical check; longitudinal and cross section contouring.

iv. Theodolite Survey –

Types of theodolites; measurement of horizontal angles, vertical angles, magnetic bearings and deflection angles; prolonging a straight line; traversing by method of included angles; balancing the survey - closing errors; calculations of latitude and departure.

b. Curves-

Elements of simple circular curves, setting out simple circular curves.

c. Set out works -

Setting out buildings, culverts, Central line of Railway alignment. Usage of GPS technology in setting out Centre line of Railway alignments.

2. Strength of Materials, Structural Designs & Drawings

a) Strength of Materials:

Stress, strain, Hooke's law, working stress, factor of safety; bending moment and shear force in simply supported beams and cantilevers; simple theory of bending. Moving loads on simply supported beams; influence lines for bending moment and shear force in statically determinate beams; short columns, long columns - empirical formulae.

b) Structural Design & Drawing Drawings

Different sizes of paper, folding and storage of drawing, plan, elevation, sections, isometric view.

c) RCC Structures

RCC, methods of design, Working Stress Method and Limit State Method. Design of singly and doubly reinforced rectangular beams including T and L beams. Design of slabs, design of column, IRS Code of Practice for RCC (Concrete Bridge Code).

d) Steel Structures

Rivets and welds. Sketch and detailing of connections different types of joints and strength determination. Design of tension member and compression member. Plate Girders, IRS Steel Bridge Code.

3. Construction material:

Description, specification, properties and uses of building materials - stones, sand, timber, bricks, cement, lime, building hardware, paints varnishes, glasses, and tiles. Concrete mix design, placing, compaction and durability.

4. Foundation & Construction Engineering

a) Soil Mechanics

Different type of Soils, Three phase diagram and their relationships, IS classification of soil, index and engineering properties of soil, compaction, consolidation, shear strength, earth pressure theories, slope stability. Specification and construction of earthwork in embankment and cuttings.

b) Foundation Engineering

Functions of foundation, different type of foundations - open foundations; well foundations and pile foundations, determination of safe bearing capacity, stress and settlement analysis, method of reducing differential settlements.

5. Hydrology and Hydraulics:

a) Hydraulics

Elements of hydraulics - Open Channel flow; flow in pipes, frictional loss, empirical formulae.

b) Hydrology

Rainfall and run-off; rainfall statistics; rain gauges, run-off calculations by empirical methods, flood discharge estimation; measurement of flood discharge-current meter.

c) Hydraulic structures

Design of bridges - alignment, number of spans; economic spans; waterway calculations; scour depth, afflux; clearance; depth of foundations; BOX and Pipe Culverts, estimation of design discharge based on para 4.3.4 of sub structure code namely using RDSO report RBF-16 for catchment size less than 25 sqkm and using flood estimation report (Synthetic unit hydrograph concept) for catchment size 25 sqkm, to 2500 sqkm.

B) Civil Engineering (Railways)

1. Railway Surveys & Construction

Provisions in Engineering Code regarding - Classification of Surveys, Terms of Reference, Principles governing Railway alignment, Ruling gradients, Grade compensation for curves, Horizontal and vertical curves, Hill Surveys, Catch sidings, Tunnels, preparation of various maps and drawings, preparation of Survey reports for RECT, PECT and FLS, Project estimates.

2. Railway Track.

(a) Track Structure and Components.

Classification of Lines, Track Structure, Rail and Rail fastenings, Sleepers & Fastenings, Ballast- Specifications, Ballast Profile/Section/Depth of Cushion, Formation- Classification of Formation Requiring Treatment and Remedial Measures Suggested, Insulated joints & Switch expansion joints, Track structure on Bridges.

(b) Duties.

Duties of ADEN, Duties of SSE/P.Way (In-charge), Duties of JE/ SSE/ P.Way (sectional), Duties of JE/ SSE/ P.Way (Other than sectional), Duties of Gang mates, Keymen, Patrolmen, Gateman and Track maintainer.

(c) Maintenance of Permanent way.

Regular track maintenance, Handling and maintenance of rails, sleepers, fastenings & other misc. Items, Works incidental to regular track maintenance, Record keeping, Maintenance of track in track circuited areas, Maintenance of track in electrified areas

(d) Special Maintenance Works.

Alumino Thermit welding of rails, Flash-Butt welding of rails, Short welded Rails, Long welded Rails. USFD.

(e) Curves and Turnout.

Curves, Realignment of curves, Points and Crossing.

(f) Track tolerances and Track Monitoring.

(g) Schedule of dimensions.

Schedule-I Standard dimensions, Station Yards and extra clearance on curve.

(h) CRS sanction for works affecting passenger running lines.

(i) Training and Competency of Permanent Way Staff.

(j) Permanent Way renewals.

(k) Engineering Restrictions and Indicators.

(l) Level Crossings and Gateman.

(m) Working of Trolleys, Lorries and Material trains etc.

(n) Track Management System.

(o) General:

Reference to G & SR; types of signals and their significance; rules for working of trains; block working rules - types, Introduction of temporary single line working.

(p) Accidents:

Action during accidents including breaches, Restoration of through running, Pre-monsoon precautionary measures.

3. Maintenance of Bridges

a) Maintenance of bridges: Responsibility of the Engineering officials, action to be taken after inspection of bridges; maintenance of substructure - abutments, piers, wing walls and return walls, maintenance of arches, dismantling of arches. Details of common repair techniques - cement pressure grouting, epoxy grouting, shotcreting/Guniting. Maintenance of RCC & PSC super structures - periodical maintenance, common defects and repair / strengthening techniques; maintenance of super structure (steel) girders - loss of camber in steel girders, cracks in steel works, strengthening of weak girders, replacement of loose rivets; maintenance of HSFG bolts, corrosion and its prevention, protective coatings by painting - periodicity and precautions, patch painting, ordinary paints - for severe and no severe corrosion, metallising & epoxy based paints, Maintenance of welded girders; maintenance of composite girders. Various defects in bed blocks and their remedies; maintenance of bearings; Precautions while carrying out maintenance works on bridges.

b) Inspection of bridges: Classification of bridges - major, minor, important; Inspection of Bridges by Permanent Way and Works Inspectors, by Bridge Inspectors (SSE/JE- P. Way, Works, Bridges) – Periodicity/ schedule and details of inspection, record of bridge Inspection, registers to be maintained by the Bridge Inspectors, Certificate of inspection. Inspection by Assistant Divisional Engineers - Bridge Inspection Register, Numerical Rating System (NRS), Unique Rating Number, Condition Rating Number, Overall Rating Number, Certificate by the Assistant Engineer. Details of Inspection of Bridge –foundations, Flooring, masonry in substructure, under-water substructure inspection, arch bridges, protection works and water ways, girder alignment and seating, structural condition of girders, track on the bridge and its approaches, trolley and safety refuges, foot paths, painting, marking HFL and danger level, providing foundation particulars and bridge name boards, flood records at important bridges, road over/under bridges, concrete bridges, special Inspection during Monsoon, equipment required for inspection of bridges. painting of steelworks, laying of bridge sleepers; replacing cracked bed blocks.

4. Rehabilitation of Bridges

Reasons for Rehabilitation, special Strengthening, Imposition of speed restriction, Priority for rehabilitation of bridges, Special Inspection, Site Data, Execution of rehabilitation works, Precautions when working on bridges; rebuilding or alterations to bridges - design and execution of bridge works; temporary arrangements; false work for erection of girders; assembly and erection of girders; cranes for erection of girders; testing of girders; proposal for strengthening existing girder spans: methods

of regirdering major bridges, Strengthening of foundations, Strengthening/rebuilding of substructure, shaken/displaced/ cracked bed blocks, distressed arch bridges, replacement of nonstandard girders, replacement of pipe culverts, distress in parapets, replacement of small opening, distress in superstructure.

5. Rivers & Floods

Behavior of rivers; past history of bridges, danger level at bridges, watchman at important bridges, duties and equipment of bridge watchmen; special inspection during monsoon, action to be taken in the case of weather warning, pitching stone, boulder and monsoon reserve; vigilance during floods; flood records during and after the monsoon; survey of the course of river. Rivers and flood register, Flood Reports, rainfall data, provision of anemometer on bridges. River training works, Guide Bunds, Spurs (Groynes), Marginal Bunds, Closure Bunds, Assisted Cut-Offs, Boulder crates, Protection of approach banks, drop wall & curtain wall i.e. protection measures for minor bridges.

6. Inspection and Maintenance of Tunnels and Deep Cuttings:

a) **Tunnels** - Inspection by Engineering officials, items to be covered in the Inspection, record of inspection, mobile staging for inspection, details of tunnel inspection, ventilation of tunnels, leakage in tunnels and methods of correction, works connected with the maintenance of tunnels.

b) **Deep Cuttings** - General, inspection register of vulnerable cuttings, points to be noted during Inspection of cuttings, action to be taken in the case of boulder drops, action to be taken after inspection of cutting, guarding of vulnerable cuttings.

7. Inspection and Maintenance of Building and Structures (Other than Bridges)

- a) Inspection & Maintenance of buildings & structures (including steel structures).
- b) Building Registers
- c) Periodical maintenance of Works including repairs to leaky roof/water proofing of roofs.
- d) Standard Measurement Registers for Buildings.
- e) Dismantling of buildings/structures.
- f) Retro-fitting / structural repairs of existing weak buildings/structures.

8. Maintenance of sanitary and hygienic conditions in station and railway Colonies; water supply, drainage and sewerage

a) Water Supply

I. Standards of Quality of drinking water- physical; chemical and bacteriological standards of water, Water-borne diseases, water demand-methods of forecasting, sources of water; Method of treatment of water – aeration; sedimentation; filtration (slow and rapid sand filters); disinfection; hardness methods of removal etc.

II. Conveyance and Distribution:-

Preparation of Schemes for New Water Supply/ Augmentation of Existing Water Supply; Estimating Requirements of Water, water supply from outside sources, Types; Selection & Installation of Pumps; Capacity of Pumping, Conveyance of Water Rising mains; systems of distribution, residual pressure; different types of pipes and fittings; testing of pipes, Pipe laying and Fittings of Valves and Meters, Storage tanks; Capacity, Maintenance and Cleaning of Storage Tanks, Water-Supply Plans, maintenance and operation of water supply installation - responsibilities of Engineering department, Mechanical department and Electrical Department.

III. Rain water harvesting – legislation, necessity; advantage; types; techniques; estimation of capacity of rain water harvesting pits/ salient methods of recharging subsurface aquifer etc.

IV. Water Audit and water Management :

Conservation of Water, water reuse, water recycling, water recycling plant, flow measurement system, identification of losses & leakages.

b) Sewerage:

Preparation of schemes for sewerage, sewage & water collection and carriage; design of sewers; house connection; storm water drains; maintenance of sewerage and drainage, conservancy and sanitary arrangements, disposal of sewage – river pollution and control; sewage treatment; land irrigation, septic tanks, primary clarifier, sludge and scum removal, trickling filters, activated sludge process, sludge digesting, principles of anaerobic digestion, sludge gas, sludge drying and disposal.

c) Sanitation:

Formation of sanitation committee ; Inspection by sanitation committee, sanitary arrangements in stations and colonies, drinking water wells-protection; Cleaning of wells; disinfection; prevention of Infectious diseases; disinfection of quarters.

9. Acquisition, management and disposal of land: General Codes, Manuals, rules:

Ownership of Railway land; sanctioning authority for acquisition and relinquishment; Principles of acquisition and relinquishment; Procedure for acquisition and relinquishment; Land plans and schedule; Documents of Handing over and taking over Railway Land; Land Records- Responsibility and procedure for demarcation, verification of railway boundary , land plan etc. Maintenance of right of way; religious structure. Management of railway Land leasing, licensing of land, way leave facility and easement rights, grow more food. Leasing licensing for merchants and vendors at stations, bulk oil installation. Encroachment and responsibly; rules for permission for construction of building near Railway land; instructions regarding cutting/ trimming and sale of natural product like mature tree, dry trees within and outside railway boundary, near electric or telegraph lines , sale of grass right etc. Provisions of Land Acquisition Act. 1989, Right to fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

10. Preparation of Plans and Estimates:

(a) Preparation of plans:

General procedure; plan for other departments; size of drawings; titles and numbering of drawings; scale of drawings; details on drawings; symbols and colours in drawings; RDSO drawings; CE's plans; Plans of Divisional/ Asst. Engineer's/Inspector's Offices; completion drawings;

(b) Preparations of estimates:

Engineering code provisions, various types of estimates, technical details, rates and quantities; schedule of rates and price - listing of stores; report and justification; rent statement for staff quarters; special features of estimates for remodeling of station yards, track renewal works, deposit works: Urgency Certificate;

11. Contract and Execution of Work:

a) Contract:

Engineering code provisions, schedule of rates; analysis, non-schedules rates, tenders; types; tender documents, drawings and specifications, tender committees, acceptance of tenders, contracts; types, contract documents, General and special condition of contract; measurement and measurement books - code reference; recording measurements; 'on account' and final measurements; standard measurements books; responsibilities of inspectors/JE/SSE) and Asst. Engineers for measurement of works; ballast measurement; computation quantities; preparation of abstract in measurement books; submission of bills; checking of bills; bill registers; Variations; PVC; Basics of Arbitration.

b) Execution of Work:

Engineering code provisions, agencies for executing works; responsibilities of executive officers; deposit works; excess and savings on estimates; attention to public interests; prevention of accidents; planning - activity, milestone, bar charts, critical path networks, PERT; departmental execution of work - record; progress reports, charges for stores and labour, execution of works In Engineering workshops; contracted works; issue of work orders; completion documents; zonal works.

12. Track Machines:

a) Organizational structure, duties and inspection:

Duties of Executive (XEN)/Assistant Executive Engineer (AXEN)/TM/Line, Duties of SSE/TM/SDI, Duties of SSE/JE/TM Working on Machines, Duties of SSE/JE Machine In-Charge Duties of Machine Assistant, Duties of Assistant Divisional Engineer (Open Line) ADEN, Duties of SSE/JE (P.Way) Deployed with the Machine, Inspection Schedule of Track Machine Officials, Inspection Schedule of Open Line Officials

b) Tamping machine and dynamic track stabilizer:

Types of Tamping Machines, Tamping Mechanism, Tamping Parameters, ALC,

Lining System, 4 Point Lining Method, Corrections to be Applied in 4 Point Lining Method, Modes of Tamping using 4-Point Lining Method (Only for curves), 3 Point Lining Method, Corrections to be applied in 3- Point Lining, Determination of Target Versine Values for the 3-Point Lining Method, Mode of Tamping using 3-Point Lining Method, Comparison between 3 Point and 4 Point Lining System, Levelling of Track, Mode of working for levelling, General Lift, Input of the Lifting Values, Survey and working of Tamping Machines in Design Mode, Works required Before, During and After Tamping, Working Principle of Dynamic Track Stabilizer, Modes of working of Dynamic Track Stabilizer, Working of DTS.

c) Ballast cleaning and handling machines:

Ballast Cleaning Machines (BCM), Types of Ballast Cleaning Machines, Working Principle and Capability of Ballast Cleaning Machines, Works Required Before, During and After Deployment of Ballast Cleaning Machines.

d) Track relaying machines:

Track Relaying Machines, Working Mechanism and Capability of Track Laying Equipment, Pre-Relaying Operations, Operation During Block, Post Relaying Operations, Working Mechanism of TRT, Operations Prior to Deployment of TRT, Operations During The Block of TRT, Post Block Operations for TRT, Precautions During TRT Working

e) Rail Grinding Machines:

Rail Grinding Machine (RGM) (Purpose & Advantage), Grinding Strategy, Working Parameters of RGM, Monitoring Equipment for Grind Quality, Quality Inspection of Grinding, Preparatory Works for Introduction of RGM, Pre-Block Activity Before Deploying RGM, Operation During RGM Block, Post Grinding Operation

f) Planning and deployment of Machines:

Pre-requisites for Deployment of Track Machines on Construction Projects/Other Agencies, Minimum Duration of Blocks, Through Tamping and Spot Attention.

g) Rules for movement and block working:

Provision of G&SR, Operation and Working of Track Machine, Competencies of Track Machine Staff, Safety Equipment, Rules for Operation – General, Important Instructions and Precautions (Protection of Work Site, Fouling of Adjacent Lines, Information to Level Crossings etc), Failure and Accidents of Track Machines, Speed Certification for Track Machines, Special Precautions while working in Special Circumstances (Ghat Sections, Night Working).

h) Periodical maintenance and associated infrastructural facility:

Maintenance Schedule for Various Track Machine, Types of Workshops, Functions of Central Periodic Overhauling Workshop (CPOH), Functions of Zonal Machine Depot (ZMD), Functions of Satellite Depot, Functions of Mobile Workshop, Functions of Camping Coach Workshop.

i) Track Machine Manpower

Training (Officers, SSEs/JEs/TM(s), Technical Staff, Machine Assistant), Roster

13. Miscellaneous:

a) Engineering plant:

Control of plant and machinery, engineering plant reserve, plant register; valuation of plant; maintenance; storage and repairs; requisitioning of plants; use of plant at site; maintenance of log books; hiring out of engineering plant; examination of boilers of the engineering department.

b) Explosives:

Issue of Instructions on use of explosives; observance of rules, carriage of explosives, Protection of trains and Railway property, precautions to be observed during blasting, Misfire with electrical method of firing, explosives disposal, destruction of explosives

c) Management of Engineering Stores:

Reference to code and Rules; procurement of stores; requisition; receipt and issue of challans; claims of short receipts; etc.; custody of stores - classification, handling and storage, Account head of stores - operation, records and returns; disposal of released and surplus stores - return to stores Depot, disposal by auction; verification of stock and adjustment for shortage/excesses.

d) Law and Order

Railway Police; lodging complaints; cooperation with railway police; cognizable offences; non cognizable offences; powers of arrest by railway staff; warrant against railway staff; action by railway staff in case of attempted sabotage; answering of court summons; Prevention of trespass disposal of human bodies found run over; disposal of cattle found dead on the line.

Annexure - 'D'

Statement of pre-selection coaching of SC/ST employees for selection to the post of AEN/AXEN (Group 'B')
against 30% LDCE selection, special drive to fill up vacancies for Civil Engineering Department held from
_____ to _____

DATE	Duration/Time		Name of Officer/Lecturer	Venue	Subjects taught
	From	To			

Number of SC/ST candidates who attended pre selection training/coaching : _____

Number of SC/ST candidates who have given refusal to attend pre selection training/coaching : _____.

Number of SC/ST candidates who remained absent during pre selection training/coaching: _____