पूर्वोत्तर रेलवे

कार्यालय महाप्रबंधक (कार्मिक), गोरखपुर.273012

संख्या- NER-HQ0PERS(SELB)/1/2024-DY CPO/GAZ/HQ/NER (114126) दिनांक 22.03.2024

सचिव/स्थापना, सलाहकार/निदेशक/सतर्कता, रेलवे बोर्ड, नई दिल्ली।
सचिव/महाप्रबन्धक एवं अपर महाप्रबन्धक, पूर्वोत्तर रेलवे, गोरखपुर।
सचिव/सभी प्रमुख विभागाध्यक्ष/ विभागाध्यक्ष, पूर्वोत्तर रेलवे, गोरखपुर।
सभी मंडल रेल प्रबन्धक, अपर मंडल रेल प्रबन्धक, मुख्य परियोजना प्रबन्धक (गतिशक्ति),पूर्वोत्तर रेलवे।
मुख्यालय/मंडल/मंडलेत्तर ईकाई के सभी कार्मिक एवं इंजीनियरिंग विभाग के अधिकारी, पूर्वोत्तर रेलवे।
महानिदेशक, भारतीय रेल राष्ट्रीय अकादमी, लालबाग बड़ोदरा।
महानिदेशक, आरडीएसओ, लखनऊ एवं महाप्रबन्धक, रेल विद्युतीकरण, प्रयागराज।
महाप्रबन्धक/बनारस लोकोमोटिव वर्क्स/बनारस, नियंत्रक अधिकारी/प्रतिनियुक्ति पर कार्यरत कर्मचारी।
सभी निदेशक/प्रधानाचार्य, प्रशिक्षण केन्द्र, पूर्वोत्तर रेलवे एवं रेलवे वेबसाईड प्रति।

विषयः-सहायक इंजी0 लेवल-08 (ग्रुप-बी) के पद पर पदोन्नति हेतु **विशेष अभियान** के अन्तर्गत 30% कोटे की रिक्तियों के विरूद्ध चयन की अधिसूचना।

सहायक इंजीनियर, ग्रुप-बी, 30 प्रतिशत कोटा, लेवल-8 के पद पर पदोन्नति हेतु लिखित एवं मौखिक परीक्षा के आधार पर चयन कराये जाने का निर्णय लिया गया है, जिसका विवरण निम्नवत् हैः-

1. रिक्ति-

पद/कोटा	UR	SC	ST	Total
सहा.इंजी., 30%	01	00	01	02

2. आवेदन की अन्तिम तिथि एवं सम्भावित परीक्षा कार्यक्रम-

क्रम सं.	विवरण	निर्धारित तिथि
01	आवेदन की अन्तिम तिथि	15.04.2024
02	लिखित परीक्षा की सम्भावित तिथि	23.06.2024

3. पात्रता.

A. सिविल इंजीनियरिंग विभाग में कार्यरत अननुसचिवीय समूह-ग(Non Ministerial Group C) कर्मचारी जिन्होने दिनांक 01.01.2023 या इससे पूर्व लेवल-6 या उससे ऊपर के ग्रेडो में पाँच वर्ष की नियमित सेवा पूरी कर ली है, इस चयन हेतु पात्र होगे।

B. पात्रता हेतु कट ऑफ डेट 01.01.2023 निर्धारित है, अर्थात दिनांक 01.01.2018 या इससे पूर्व लेवल-6 या उससे ऊपर के ग्रेडो में नियमित रूप से नियुक्त कर्मचारी इस चयन हेतु पात्र होगे।

C. रेलवे बोर्ड के पत्र संख्या ई(जीपी) 2005/2/74 दिनांक 13.03.2008 (RBE No. 40/2008) के अनुसार पदों के समान श्रेणी में किसी नई यूनिट में अनुरोध आधार पर स्थानान्तरित किए गए व्यक्तियों के मामले में और उसमें दी गयी निम्नतम वरिष्ठता में उनके द्वारा पिछली यूनिट में की गई सेवा को उनकी अर्हता निर्धारण में गिना जाए जहाँ शर्त के रूप में नई यूनिट में पदोन्नति के लिए न्यूनतम सेवा अवधि निर्धारित की गई है, जो इस शर्त के अध्यधीन है कि इस प्रकार अनुमति दी गई सेवा अवधि उनकी नई यूनिट में उनके निकटतम वरिष्ठ की सेवा अवधि से अधिक नहीं है।

D. उपरोक्त चयन मास्टर सर्कुलर-68 (अपडेट-2019) एवं रेलवे बोर्ड द्वारा जारी अन्य निर्देशो के अनुसार होना सुनिश्चित है।

4. चयन पूर्व प्रशिक्षण

रेलवे बोर्ड के पत्र संख्या ई (जीपी)2010/2/39 (आरबीई-142/2019) दिनांक 28.08.2019 एवं ई (जीपी) 2022/2/4 दिनांक 07.02.2023 के अनुसार इस चयन हेतु अजजा अभ्यर्थियों को 15 दिन/60 घंटे का चयन पूर्व प्रशिक्षण दिया जाना है।

24/3/24

5. चयन प्रक्रिया.

A. मास्टर सर्कुलर-68, रेलवे बोर्ड के पत्र संख्या ई (जीपी)2022/2/4 दिनांक 28.06.2022 एवं ई (जीपी)2022/2/4 दिनांक 06.09.2022 में निहित निर्देशानुसार उपरोक्त चयन हेतु लिखित परीक्षा, मौखिक परीक्षा एवं सेवा अभिलेख के अंको का आवंटन निम्नवत् है-:

Topic	Questions	Marks	अर्हक अंक
Technical (Professional) subject	85 Questions (includes 5 optional questions)	80	90 अंक
General Knowledge Policy & Rules	55 Questions (includes 15 optional questions on official language Policy & Rules)	40	
Establishment & Financial Rules	35 Questions (includes 5 optional questions)	30	
सेवा अभिलेख	-	25	30 अंक (इसमें सेवा अभिलेख में कम से कम 15 अंक प्राप्त होना आवश्यक है)
मौखिक परीक्षा	-	25	

B. लिखित परीक्षा में 150 अंको का एक प्रश्न पत्र होगा, जिसमें 100 प्रतिशत वस्तुनिष्ठ किस्म के100 बहुविकल्पीय प्रश्न होगे। परीक्षा का समय 03 घण्टे निर्धारित है।

C. गलत जवाबों के नकारात्मक अंक होंगे। प्रत्येक सही उत्तर के लिए एक अंक निर्धारित है तथा प्रत्येक गलत उत्तर के लिए एक तिहाई अंक काटा जायेगा।

D. इस चयन हेतु रेलवे बोर्ड के पत्र संख्या ई (जीपी) 2022/2/4 दिनांक 07.11.2022 द्वारा निर्धारित पाठ्यक्रम संलग्न है।

6. अभ्यर्थियों हेतु निर्देश-

A. चयन के दौरान पात्रता के सम्बन्ध में यदि कोई नया तथ्य प्रकाश में आता है, जिसमें अभ्यर्थी की पात्रता प्रभावित होती हो तो उसे चयन के किसी भी स्टेज में अपात्र घोषित कर दिया जायेगा। इस चयन हेतु अनुपस्थिति लिखित परीक्षा का कोई प्रावधान नहीं है।

B. चुकि यह अधिसूचना वेबसाइट के माध्यम से सर्वसम्बन्धित के सूचनार्थ प्रकाशित है एवं अभ्यर्थियों से विकल्प प्राप्त होने के पश्चात उनकी जॉचोपरान्त पात्रता सूची, परीक्षा कार्यक्रम आदि की सूचना भी वेबसाइट के माध्यम से सर्वसम्बन्धित के सूचनार्थ प्रकाशित की जानी है, अद्यतन सूचना/दिशा निर्देशो हेतु सभी अभ्यर्थी पूर्वोत्तर रेलवे की वेबसाईट https://ner.indianrailways.gov.in/ समय-समय पर देखते रहें।

7. नियत्रंक अधिकारी/कार्मिक अधिकारी हेतु निर्देश-

A. इच्छुक अभ्यर्थी निर्धारित प्रारुप अनुलग्नकअ- पर आवेदन **दिनांक 15.04.2024** तक अपने नियंत्रक अधिकारी को अवश्य प्रस्तुत कर दे।

B. नियंत्रक अधिकारी **दिनांक 15.04.2024** तक प्राप्त सभी आवेदनो को **दिनांक 17.04.2024** तक सम्बन्धित कार्मिक अधिकारी को अवश्य उपलब्ध करा दे।

C. सम्बन्धित कार्मिक अधिकारी आवेदन में भरे गये सभी सूचनाओं की जांचकर यह सुनिश्चित करें की सभी प्रविष्टियां ठीक है एवं आवेदक इस चयन हेतु पात्र है। सभी पात्र अभ्यर्थियों के मूल आवेदन पत्रों को **दिनांक 22.04.2024** तक इस कार्यालय को अवश्य उपलब्ध करा दे।

D. सम्बन्धित कार्मिक अधिकारी, अभ्यर्थी द्वारा भरे गए विवरण एवं इस चयन हेतु पात्रता का मिलान कर्मचारी की सेवा पुस्तिका से करा कर सावधानीपूर्वक इस तथ्य की जॉच कर लें कि वर्तमान वरीयता ईकाई में कर्मचारी दिनांक 01.01.2018 या इससे पूर्व लेवल-6 या उससे ऊपर के ग्रेडों में नियमित रूप से कार्यरत है। यह भी सुनिष्चित कर लें कि स्थानान्तरण पर आये अभ्यर्थियों को वर्तमान वरीयता ईकाई में दी गई सेवा अवधि उनके निकटतम वरिष्ठ की सेवा अवधि से अधिक नहीं है।

संलग्नक-आवेदन पत्र एवं पाठ्यक्रम।

22/03/24

(आनन्द कुमार)
सकाधि/राज
कृते महाप्रबन्धक कार्मिक

अनुलग्नक 'अ'

आवेदन पत्र

उपमुकाधि/राजपत्रित,
पूर्वोत्तर रेलवे, गोरखपुर।

Photograph

(To be attested by Controlling Officer)

द्वारा–उचित माध्यम

विषयः–**स्पेशल ड्राइव के अन्तर्गत** सहायक इंजीनियर, 30 प्रतिशत (ग्रुप–बी) लेवल–8 के रिक्त पदों हेतु सीमित विभागीय प्रतियोगितात्मक परीक्षा (एलडीसीई) कोटा के विरूद्ध चयन।

संदर्भः– No-NER-HQ0PERS(SELB)/1/2024-DY CPO/GAZ/HQ/NER (114126) दिनांक 22.03.2024

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संदर्भित अधिसूचना के अनुसार मै इस परीक्षा हेतु पात्र हूँ तथा मेरा विवरण निम्नवत् है–

नाम	हिन्दी में . . . . . अंग्रेजी के बडे अक्षरों में	
पिता/पति का नाम	अंग्रेजी के बडे अक्षरों में	
IPAS Employee No (11 Digit)		(Pls attach Pay-Slip)
बिल यूनिट		
HRMS ID (स्पष्ट अक्षरों में)		
पदनाम एवं कार्य स्थल		
मोबाईल नं0 (10 Digit)		
ई–मेल आईडी (कैपिटल लेटर में)		
विभाग/मंडल/ईकाई		
नियंत्रक अधिकारी		
जन्मतिथि		
प्रथम नियुक्ति तिथि,		
ग्रेड पे रू0 4200 में तिथि		
ग्रेड पे रू0 4600 में तिथि		
शैक्षणिक योग्यता		
समुदाय (अजा/अजजा/अनारक्षित)		
चयन पूर्व प्रशिक्षण हेतु इच्छुक है या नहीं		(केवल अ.ज.जा के लिए)
यदि अंतर रेलवे स्थानान्तरण पर इस रेलवे में आये है तो उसका विवरण।	रेलवे जहाँ से आये है।	इस रेलवे पर कार्यभार ग्रहण करने की तिथि एवं ग्रेड पे, लेवल
यदि पारस्परिक अंतर रेलवे स्थानान्तरण पर आये है तो उसका विवरण	कर्मचारी का नाम एवं पद जिससे साथ पारस्परिक स्थानान्तरण पर आये है।	इस रेलवे पर कार्यभार ग्रहण करने की तिथि।
वरियता सूची के अनुसार आपसे निकटतम वरिष्ठ कर्मचारी का विवरण	नाम, पदनाम एवं लेवल	पदस्थापना तिथि

मै एतद्द्वारा यह घोषणा करता/करती हूँ कि मेरे द्वारा दी गयी उपरोक्त सभी सूचना/घोषणा सत्य एवं सही हैं तथा उक्त चयन हेतु पात्र हूँ, यदि कोई सूचना/घोषणा गलत पायी जाती है या पात्रता के सम्बन्ध में यदि कोई नया तथ्य प्रकाश में आता है, जिससे मेरी पात्रता प्रभावित होती है तो चयन के किसी भी स्टेज में मुझे अपात्र घोषित कर दिया जाए।

अभ्यर्थी का हस्ताक्षर.....
दिनांक .....

नियंत्रक अधिकारी के हस्ताक्षर/कार्यालय मुहर

उपरोक्त विवरण एवं इस चयन हेतु पात्रता का मिलान कर्मचारी की सेवा पुस्तिका से कर लिया गया है, वर्तमान इकाई में कर्मचारी दिनांक 01.01.2018 या इससे पूर्व से लेवल–6 या उससे ऊपर के ग्रेडों में नियमित रूप से कार्यरत है। उक्त कर्मचारी इस चयन हेतु अधिसूचना में दिए गए शर्तो के अनुसार पात्र है।

यह भी प्रमाणित किया जाता है कि सेवा रिकार्ड के अनुसार ग्रेड पे रू0 4200, लेवल–6 एवं इससे ऊपर की गई कुल सेवा दिनांक 01.01.2023 को.....वर्ष .....माह.....दिन है, तदनुसार इसे उपमुकाधि/राजपत्रित कार्यालय को अग्रेषित किया जाता है।

कार्मिक अधिकारी के हस्ताक्षर/कार्यालय मुहर

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

No. E(GP)2022/2/4 **New Delhi, dt:07/11/2022**

The General Managers,
All Indian Railways/PUs.

(Kind Attn.:All PCPOs/PFAs/Dy.CPO(G) & Dy.CAO(G)

Sub.: Promotions to Group 'B' posts on Indian Railways - Introduction of Centralized Computer Based Multiple Choice Objective type examination (CBT) in all departments having Organised Services

Board has prescribed syllabus for written examinations held as part of 30% LDCEs for promotion to Group 'B' posts in all Organised Services. Besides this, syllabus for 70% Selection for promotion to Group 'B' post of APO has also been prescribed by Board. Now, in the context of introduction of Centralised CBT for 70% Selections and 30% LDCEs for promotion to Group 'B' posts, Board has prescribed syllabus of 70% Selections and have also modified the syllabus for 30% LDCEs for all Group 'B' posts in Organised Departments. Similarly, syllabus for Establishment & Financial Rules has also been prescribed.

2. A copy each of the Syllabus for professional subjects prescribed by Board for 70% Selections and 30% LDCEs for promotion to Group 'B' posts in all Departments having Organised services along with the syllabus for Establishment & Financial Rules is enclosed for information. These syllabi are applicable for Selections & LDCEs to be conducted w.e.f.1.1.2023.

DA:As above

M Saluja
07/11/22

(Meenakshi Saluja)
Dy. Director, Estt.(GP)-III
Railway Board
Ph. No. 233047250
E.mail ID- meena.1964@gov.in

Syllabus for promotion to Group- B posts - 70% selection and 30% LDCE.

Syllabus for Establishment Rules:

1 Organization of the Personnel Department in Railways objectives functions and policies of Personnel Department.

2. Recruitment and Training, Classification of Services, Recruitment in Different services, Railway Recruitment Boards & Railway Recruitment Cells Compassionate Ground Appointments, Initial & In Service Training, Refresher Courses, Central Training Institutes, Training Centers in Zones, Divisions & Workshops, Training Modules for different posts, Training under Apprentices Act, Online Training, APARs.

3. General conditions of service in Railways, Seniority, Lien, Inter Railway & Inter Division transfers, Deputation, Promotion Policy & methods. Selection, Suitability, Trade Tests, Leave Rules, Pass Rules, Joining Time Reservation policy, HOER, Overtime, Payment of wages, current CPC Pay Rules, Advances in Railways.

4. Manpower planning, Rightsizing & Benchmarking, creation, extension and surrender of posts, creation of posts against new assets, different types of posts including workcharged posts.

5. The Railway Servants (Discipline & Appeal) Rules, 1968 and related instructions.

6. The Railway Services (Conduct) Rules, 1966 and related instructions.

7. Retirement benefits, qualifying service, pension, family pension, commutation gratuity, new pension scheme.

8. Staff welfare, SBF, Railway institutes, Railway schools, Ex-gratia payment, Incentive Bouns Scheme, Staff Grievances Redressal Mechanisms.

9. Industrial relations in Railways, recognized trade unions, industrial disputes. The Industrial Disputes Act, 1947. The Industrial Relations Code, 2020. The Trade Unions Act, 1926, PNM, PREM, JCM, Various Associations & Informal Meetings.

10. The Factories Act, 1948. The workmen's Compensation Act, 1923. Functions of Labour Enforcement Officers, Right to Information Act.

11. The scope of Information Technology in Railway e – office. HRMS, IPAS , LIMBS, ARPAN, CPGRAMS, ANUBHAV etc.

Syllabus for Financial Rules:

1. Parliamentary Control over Railway Finance, Public Accountability, Cannons of Financial Propriety.

2. Railway Budget - Budgetary terms, Types of Budgets, Budget cycle, Demand of Grants, Budgetary and Financial Reviews.

3. Rules of Allocation - Classification of expenditure - Control of expenditure - Responsibility Accounting - Performance Budgeting - Exchequer Control - Financial Results of Working lines.

4. Works Programme - Financial justification of Works - Surveys - Preparation of Estimates - Capital Budget - Control over Capital Expenditure - Reappropriation of Funds.

5. Financial control over Stores Expenditure - Purchase and Stores Keeping Procedure - Inventory Control and ABC Analysis.

6. Financial & Cost Control in Railway *Wo*rkshops/Sheds/Units.

7. Rules and procedure relating to Tenders and contracts for execution of works and Procurement of Stores, M&P Programme and RSP.

8. Procedure for Possessing and finalizing Audit Objections and Draft Paras.

9. Delegation of Powers.

10. Losses, Frauds and Embezzlements.

11. General Financial Rules

12. Government e-Market (GeM)

13. Classification of Railway Revenue (Earnings)

14. Information Technology in general with specific reference to Railway's IT Applications
15. Taxation matters with special focus on GST & Income Tax

16. Organization of CGA and C&AG

17. Any other topic felt necessary from time to time

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 Trollies, 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) <u>Water Supply</u>

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) <u>Sewerage:</u>

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) <u>Sanitation:</u>

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.