NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16013/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

Divisional Railway Manager/NR: DLI, FZR, MB, UMB, LKO & JAT
Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
CWM/Signal Shop, GZB.
CAO/C: K. Gate DLI & Satyam Complex, Trikuta Ngr/JAT.
MD/NRCH.
Chief Manager (Ptg. &Sty) Punjabi Bagh, Delhi
Dy.CMM: SSB, AMV-LKO & JUDW.
DY.CE/TMC/Line, State Entry Road, New Delhi.
Dy.CE/Bridge, CB-LKO, JUC & TKJ.

Sub: Syllabus of written examination for the post of Chemical and Metallurgical Superintendents.

Ref: (i) PCPO/NR's letter no. PCPO/Sel./2025 dated 15/05/2025.
(ii) Dy.CME/HQ's letter no. Confdl.Mech/Group C Selection/266 dated 14/07/2025.

*****

In reference to above subject, the syllabus of written examination for the post of Chemical and Metallurgical Superintendents (CMS), Mechanical in Level-07, is enclosed herewith for your information and necessary action please.

The above PS.No. is available on the website given as under:-https://nr.indianrailways.gov.in

Please acknowledge the receipt

DA: As Above

16/07

(Udot Jha)
For General Manager (P)

Copy to:

1. All PHODs and All Officers of Personnel Deptt., HQ Office,Baroda House, New Delhi.
2. Genl. Secy./NRMU, 12 Chelmsford Road, New Delhi.
3. Genl. Secy./ URMU, 166/2, P.K.Road, New Delhi.
4. Genl. Secy./AIOBC Rly Emp. Asso. 171/A3, Basant Lane, New Delhi.
5. Genl. Secy./ All India SC/ST Rly Emp. Asso. North Zone Office, Baroda House, New Delhi.
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Northern Railway

HQ office
Baroda House
New Delhi

Confdl.Mech/Group C Selection/266 **Dt. 14/07/2025**

Secy. to PCPO
Northern Railway
Baroda House
New Delhi.

Sub.: Preparation of Syllabus and Question Bank for selection for Group C post.

Ref:- Pr. CPO's letter No.PCPO/Se3l./2025 dt. 15.05.2025.

Vide ref. above, please find enclosed syllabus for following Group C posts: -

SN	Post / Designation	LEVEL
1	Chemical and Metallurgical Superintendent (CMS)	L-7
2	Chemical and Metallurgical Assistant (CMA)	L-6
3	Junior Engineer/C&W and Junior Engineer/Mech	L-6
4	Junior Engineer/Mech. (Workshop)	L-6
5	Junior Engineer/Dsl/Mech.	L-6
6	Junior Engineer/Dsl/Elect.	L-6
7	Tech.-III/C&W	L-2
8	Tech.-III/Workshop	L-2
9	Tech-III/Dsl/Elect.	L-2
10	Tech.-III/Dsl/Mech.	L-2

This has been issued with the approval of PCME/NR.

DA: as above

14.07.2025

(Dy. CME/HQ)

Syllabus for the post of CMS (Level-7)

Part 1: General Knowledge

1.1 Important National & International Events, Authors, Places & Personalities etc
1.2 Sports
1.3 "Who's Who"
1.4 Facts about Indian Railways & its Organization
1.5 Current Affairs

Part-2: English

2.1 Antonyms and Synonyms
2.2 Idioms & Phrases
2.3 Translation (Hindi to English and English to Hindi)
2.4 Tenses, Modals, Determiners, Prepositions
2.5 Active and Passive Voice
2.6 Direct and Indirect Speech
2.7 Letter Writing
2.8 Story Writing
2.9 Essay Writing
2.10 Unseen Passages

Part-3: Mathematics

3.1 Algebra
- 3.1.1. Real Numbers
- 3.1.2. Polynomials
- 3.1.3. Pair of Linear Equations in Two Variables
- 3.1.4. Quadratic Equations

3.2 Arithmetic
- 3.2.1. Problems based on age, time, work, and money

3.3 Triangles
- 3.3.1. Area
- 3.3.2. Congruence of Triangles
- 3.3.3. Criteria for Congruence of Triangles
- 3.3.4. Some Properties of a Triangle
- 3.3.5. Similar Figures
- 3.3.6. Similarity of Triangles
- 3.3.7. Criteria for Similarity of Triangles

N.Rly

3.4 Coordinate Geometry
- 3.4.1. Distance Formula
- 3.4.2. Section Formula

3.5 Introduction To Trigonometry
- 3.4.1. Trigonometric Ratios
- 3.4.2. Trigonometric Ratios of Specific Angles
- 3.4.3. Trigonometric Identities
- 3.4.4. Applications Of Trigonometry (Heights and Distances)

3.6 Circles
- 3.5.1. Angle Subtended by a Chord at a Point,
- 3.5.2. Perpendicular from the Centre to a Chord
- 3.5.3. Equal Chords and their Distances from the Centre
- 3.5.4. Angle Subtended by an Arc of a Circle
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- 3.5.6. Tangent to a Circle, Number of Tangents from a Point on a Circle
- 3.5.7. Areas Related to Circles (Areas of Sector and Segment of a Circle)

3.7 Surface Areas and Volumes of cuboid, cone, cylinder, and sphere; and Combination of Solids

3.8 Statistics
- 3.7.1. Mean of Grouped Data
- 3.7.1. Mode of Grouped Data
- 3.7.1. Median of Grouped Data
- 3.7.1. Mean Deviation & Standard Deviation

Part-4: General Science

4.1 Matter In Our Surroundings (Physical Nature of Matter, Characteristics of Particles of Matter, States of Matter, Mixture, Solution, Concentration of a Solution, Compound)

4.2 Atoms, Molecules and Chemical Reactions, Structure of the Atom, Valency, Atomic Number, Mass Number, Isotopes, Isobars, Laws of Chemical Combination, Chemical Equations, Types of Chemical Reactions, Oxidation and Reduction, Acids, Bases and Salts, Types of Oxides, Properties and Laboratory Preparation of Oxygen, Hydrogen, and Nitrogen)

4.3 Metals and Non-metals (Physical Properties, Chemical Properties of Metals, Occurrence of Metals, Corrosion)

4.4 Carbon and Its Compounds (Bonding in Carbon, Versatile Nature of Carbon, Chemical Properties of Carbon Compounds, Important Carbon Compounds – Ethanol and Ethanoic, Acid Soaps and Detergents)

4.5 Force And Laws of Motion (Motion Along a Straight Line, Uniform Motion and Nonuniform Motion, Speed with Direction, Acceleration, Equations of Motion, Uniform Circular Motion, Balanced and Unbalanced Forces, First Law of Motion, Second Law of Motion, Third Law of Motion, and Inertia and Mass)

4.6 Gravitation (Universal Law of Gravitation, Free Fall, Mass & Weight, Thrust and Pressure, Buoyancy, Archimedes' Principle.

4.7 Work And Energy (Scientific Conception of Work, Forms of Energy, Potential Energy, Potential Energy of an Object at a Height, Law of Conservation of Energy, Power, Method of Heat Transfer)

4.8 Sound (Propagation of Sound, Characteristics of a Sound Wave, Reflection of Sound, Echo, Reverberation, Range of Hearing, Applications of Ultrasound)

4.9 Light – Reflection and Refraction (Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refraction through a Rectangular Glass Slab, The Refractive Index,

Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Refraction of Light Through a Prism, Dispersion of White Light by a Glass Prism Ass Prism, Atmospheric Refraction)

4.10 Electricity (Electric Current and Circuit, Electric Potential and Potential Difference, Symbols of some commonly used components in circuit diagrams, Ohm's Law, Factors on Which the Resistance of a Conductor Depends, Resistance of a System of Resistors, Heating Effect of Electric Current, Electric Power)

4.11 Magnetic Effects of Electric Current (Magnetic Field and Field Lines, Magnetic Field due to a Current-Carrying Conductor, Force on a Current-Carrying Conductor in a Magnetic Field, Domestic Electric Circuits)

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
5.8 Basic Knowledge about HRMS, RESS, HIMS, and NPS web portals/App

Part-6 राजभाषा

6.1 संघ की राजभाषा नीति का सामान्य परिचय
6.2 राजभाषा अधिनयम 1963
6.3 राजभाषा संशोधन नियम 1976
6.4 राजभाषा संकल्प 1968
6.5 राजभाषा से संबन्धित वार्षिक पाठ्यक्रम एवं प्रचलित शब्दावली

Part-7 Professional Knowledge

7.1 Ferrous &Non-ferrous materials

Brief knowledge of different ferrousand non-ferrous materials used in Indian Railways

1.1 Carbon Steels and their types
1.2 High Speed Steels /Tool steels
1.3 Spring Steels
1.4 Different types of Cast iron
1.5 Bearing alloys
1.6 Brass & Bronze
1.7 ETP Copper
1.8 Aluminum and its alloys

7.2 Brief knowledge of role of different elements in materials

2.1 Carbon, Manganese, Silicon, Nickel, Chromium, Vanadium, Molybdenum, Sulphur, Phosphorous, Tungstenetc in ferrous materials.

2.2 Copper, Zinc, Tin, Lead, Antimony, Nickel, Phosphorous etc in brass, bronze and other bearing alloys.
2.3 Copper, Manganese, Magnesium, Iron etc in Aluminum alloys.

7.3. Brief knowledge of Physical Properties of Materials

3.1 Hardness, method of test, relevant specifications and different scales.
3.2 Tensile Strength, Yield Strength and Elongation, method of test, relevant specifications.
3.3 Bend Test and Impact Tests

7.4. Brief knowledge of Macro & Micro examination

4.1 Different Etching solutions and their compositions
4.2 Case Depth and Heat affected zone
4.3 Different Micro Structures of steels and cast iron
4.4 Micro structure of Rail, Knuckle, and Spring
4.5 Grain size and inclusions

7.5. Brief knowledge of Heat treatment

5.1 Different heat treatment processes
5.2 Iron-Carbon diagram and T-T-T curve
5.3 Case and Surface hardening processes

7.6. Chemical analysis of materials

6.1 Estimation of Mn, P, S and Cr in ferrous alloys
6.2 Estimation of C and S through Strohlein Apparatus
6.3 Estimation of Si, Ni, Mo and W
6.4 Electro gravimetric estimation of Cu and Pb
6.5 Chemical analysis of White metal Gr. 5 &84
6.6 Brief knowledge of Optical Emission Spectroscopy (OES)

7.7. Visual Examination and Non-destructive testing (NDT)

7.1 Visual Examination / inspection of components0
7.2 Liquid Penetrant test (RDP and Zyglo)
7.3 Magnetic Particle Inspection (MP/Magnaflux)
7.4 Ultrasonic testing of axles & wheels
7.5 Eddy current testing
7.6 Brief knowledge of Radiography

7.8. Transformer oil of Electric, Diesel Locomotives,Trainset,EMU,MEMU,DEMU

8.1 Brief knowledge of types of Transformer oil
8.2 Dissolved gas analysis (DGA) and acceptable limits of different dissolved gases
8.3 Dielectric strength and Break Down Voltage (BDV) test

. Grease, Gear case oil and Lube oil

.1 Brief Knowledge of different types of Grease and Lube oil used in Coaches, Electric, Diesel Locomotives, Trainset,EMU,MEMU,DEMU.

9.2 Ferrous debris test of Grease and Gear case oil and acceptable limits

9.3 Drop point test of Grease

9.4 Viscosity, Sulphur, Pour point and Flash point test of HSD oil.

9.5 Viscosity and Flash point test of Gear case oil and Lube oil

9.6 Optical Emission Spectroscopy of Lube oils and acceptable limits of different metal concentrations.

7.10. Brief knowledge of Thermit Welding and Flash Butt Welding of Rails

10.1 Different types of Rails in India Railways

10.1 Principle

10.2 Different ingredients of thermit portions

10.3 Process

10.4 Defects and their Precautions

7.11. Brief knowledge of general Welding

11.1 Different types of Welding processes

11.2 Different types of Electrodes used in IR and their specifications.

11.3 Welding defects and their remedies.

7.12. Corrosion Prevention and Paint Testing

12.1 Types of paints (Enamel, PU and Epoxy) and their applications

12.2 Painting Process

12.3 General Testing of paint:

(a) Consistency and Viscosity

(b) Drying time

(c) Fineness

(d) Gloss and DFT measurement

(e) Scratch hardness

12.4 Painting Defects and their precautions

7.13. Rubber and Plastics

13.1 Different types of Rubbers used in Indian Railways

13.2 Polymer identification of different rubbers and elastomers

13.3 Hardness and different scale of hardness

13.4 Swelling test, Tensile test and Compression set.

7.14. Quality management system and Certification

14.1 Brief knowledge of quality systems like Integrated Management System (IMS), 5S, Energy Management System to ISO 50001.

14.2 NABL Accreditation of Testing Laboratories.

14.3 Calibration of testing equipments

N.Rly

14.4 Brief knowledge of Effluent Treatment and sewage treatment Plants (ETP & STP) and related rules of Pollution Control Board.
14.5 Solid, Liquid and Gases wastes and Hazardous materials.

7.15. Rules & Regulations

15.1 Procurement of Non-Stock items for laboratory
15.2 AAC of consumables
15.3 Sampling and Inspection of store items
15.4 Material and Man Gate Pass
15.5 Preservation of Different Records and Test Certificates etc.

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(ii) Dy.CME/HQ's letter no. Confdl.Mech/Group C Selection/266 dated 14/07/2025.

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Syllabus for the post of CMA (Level-6) 33.3% promotion quota

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4.9 Light – Reflection and Refraction (Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refraction through a Rectangular Glass Slab, The Refractive Index,

Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Refraction of Light Through a Prism, Dispersion of White Light by a Glass Prism Ass Prism, Atmospheric Refraction)

4.10 Electricity (Electric Current and Circuit, Electric Potential and Potential Difference, Symbols of some commonly used components in circuit diagrams, Ohm's Law, Factors on Which the Resistance of a Conductor Depends, Resistance of a System of Resistors, Heating Effect of Electric Current, Electric Power)

4.11 Magnetic Effects of Electric Current (Magnetic Field and Field Lines, Magnetic Field due to a Current-Carrying Conductor, Force on a Current-Carrying Conductor in a Magnetic Field, Domestic Electric Circuits)

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
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Part-6 राजभाषा

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Part-7 Professional Knowledge

7.1 Basic knowledge of different Chemical and Metallurgical testing equipments.
7.2 Basic knowledge of Organic and Inorganic Chemistry on the following subject:
   i. Different Chemical reagents and reactions used in chemical laboratory.
   ii. Elements, Compounds and mixtures.
   iii. Atomic weight, Molecular weight and Atomic structure.
   iv. Solution, Normality, Titration, Catalysis and End Point.
   v. Metallurgy of metals and Non-metals.
   vi. Redox reaction.
7.3 Different type of heat Treatment Processes.
7.4 Sample preparation methods for micro, macro, hardness examination.
7.5 Precautions to be taken during sample preparation and testing in following laboratory/tests:
   a. Mechanical laboratory
   b. Chemical laboratory
   c. Rubber, Oil and paint laboratory
   d. Metallographic laboratory

e. Ultrasonic laboratory
f. DPT, MPT and Latest NDT techniques.

7.6 General awareness on ISO-9001, ISO-14001, ISO-45001, ISO-50001, IRIS.

7.7 Awareness about hazards in chemical Laboratory and safe practices of working.

7.8 NABL accreditation.

NORTHERN RAILWAY
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Sub: Syllabus of written examination for the post of Junior Engineer/C&W and Junior Engineer/Mech.

Ref: (i) PCPO/NR's letter no. PCPO/Sel./2025 dated 15/05/2025.
(ii) Dy.CME/HQ's letter no. Confdl.Mech/Group C Selection/266 dated 14/07/2025.

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Syllabus for TQ/PQ examination for selection to the post of Junior Engineer (Mech.) /C&W

Part 1: General Knowledge

1.1 Important National & International Events, Authors, Places & Personalities etc.
1.2 Sports
1.3 "Who's Who"
1.4 Facts about Indian Railways & its Organization, Important events in Indian Railways
1.5 Current Affairs

Part-2: English

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2.2 Idioms & Phrases
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2.5 Direct and Indirect Speech
2.6 Unseen Passages

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- 3.1.2. Polynomials
- 3.1.3. Pair of Linear Equations in Two Variables
- 3.1.4. Quadratic Equations

3.2 Arithmetic
- 3.2.1. Problems based on age, time, work, money, Profit and Loss, and Interest

3.3 Geometry
- 3.4.1. Lines
- 3.4.2. Triangles: Pythagoras' Theorem, Midpoint Theorem, Area, Congruence of Triangles, Angle Sum Property, Exterior Angle Property; Similar Figures, Similarity of Triangles
- 3.4.3. Properties and area of Parallelogram
- 3.4.4. Circles: Area and Perimeter of Circle, Angle Subtended by a Chord at a point, Perpendicular from the Centre to a Chord, Equal Chords and their distances from the Centre, Angle subtended by an Arc of a Circle, Cyclic Quadrilaterals, Tangent to a Circle, number of Tangents from a point on a Circle, Area of Sector and Segment of a Circle
- 3.4.5. Surface Areas and Volumes of cuboid, cone, cylinder, and sphere; and Combination of Solids

3.4 Coordinate Geometry
- 3.5.1 Basics of the Cartesian system
- 3.5.2 Distance Formula

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- 3.5.1. Trigonometric Ratios
- 3.5.2. Trigonometric Ratios of Specific Angles
- 3.5.3. Trigonometric Identities
- 3.5.4. Applications of Trigonometry: Heights and Distances

3.6 Statistics
- 3.8.1. Mean, Mode, Median of Grouped Data
- 3.8.1. Mean Deviation & Standard Deviation

Part-4: General Science

4.1 Matter in Our Surroundings: Physical Nature of Matter, Characteristics of Particles of Matter, States of Matter, Mixture, Solution, Concentration of a Solution, Compounds

4.2 Atoms, Molecules and Chemical Reactions, Structure of the Atom, Valency, Atomic Number, Mass Number, Isotopes, Isobars, Laws of Chemical Combination, Chemical Equations, Types of Chemical Reactions, Oxidation and Reduction, Acids, Bases and Salts, Name of salts and compounds, Types of Oxides, Properties and Laboratory Preparation of Oxygen, Hydrogen, and Nitrogen

4.3 Metals and Non-metals (Physical Properties, Chemical Properties), Ores of Metals, Corrosion and its prevention

4.4 Carbon and Its Compounds: Bonding in Carbon, Versatile Nature of Carbon, Chemical Properties of Carbon Compounds, Important Carbon Compounds – Ethanol and Ethanoic Acid, Soaps and Detergents

4.5 Force and Laws of Motion: Motion Along a Straight Line, Uniform Motion and Non-Uniform Motion, Speed with Direction, Acceleration, Equations of Motion, Uniform Circular Motion, Balanced and Unbalanced Forces, Laws of Motion, Inertia and Mass

4.6 Gravitation: Universal Law of Gravitation, Free Fall, Mass & Weight, Thrust and Pressure, Buoyancy, Archimedes' Principle

4.7 Work and Energy: Scientific Conception of Work, Forms of Energy, Potential Energy, Potential Energy of an Object at a Height, Law of Conservation of Energy, Power, Method of Heat Transfer

4.8 Sound: Propagation of Sound, Characteristics of a Sound Wave, Reflection of Sound, Echo, Reverberation, Range of Hearing, Applications of Ultrasound

4.9 Light: Reflection and Refraction, Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refractive Index, Refraction through a Rectangular Glass Slab & prism, Atmospheric Refraction, Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Dispersion of White Light by a Glass Prism

4.10 Electricity: Electric Current and Circuit, Electric Potential and Potential Difference, Symbols of some commonly used components in circuit diagrams, Ohm's Law, Factors affecting the Resistance, Resistance of a System of Resistors, Heating Effect of Electric Current, Electric Power, Domestic Electric Circuits

4.11 Magnetic Effects of Electric Current: Magnetic Field and Field Lines, Magnetic Field due to a Current-Carrying Conductor, Force on a Current-Carrying Conductor in a Magnetic Field

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
5.8 Basic Knowledge about HRMS, RESS, HIMS, NPS/UPS, and UMID web portals/App

art-6 Stores

6.1 System of receiving and issuing goods from the store, local purchase, and inventory control

6.2 Stock and Non-Stock Items, PL Number

6.3 Basic Knowledge about UDM, GEM, IMMS, IREPS

Part-7 राजभाषा

7.1 संघ की राजभाषा नीति का सामान्य परिचय

7.2 राजभाषा अधिनयम 1963

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Part-8 Professional Knowledge

8.1 ICF Coach Maintenance

8.1.1 Salient features of ICF Coaches

8.1.2 Knowledge of safety and furnishing items

8.1.3 Pattern of Coaching maintenance as per RPC-IV

8.1.4 Draw and Buffing gear

8.1.5 Bogie components, load transmission, tractive/braking force transmission

8.1.6 Air brake system & its components, Bogie Mounted Brake System(BMBC)

8.1.7 Transportation codes for ICF coaches and coach numbering system

8.1.8 Maintenance schedules periodicity of ICF coaches (A, B, C, IOH and POH)

8.2 LHB Coach Maintenance

8.2.1 Introduction and salient feature of LHB coaches and comparison with ICF coaches

8.2.2 Pattern of Coaching maintenance as per RPC-IV

8.2.3 Examination of Coaching stock: Primary, Terminal and Secondary

8.2.4 Knowledge of safety and furnishing items in coaches

8.2.5 Transportation codes for LHB coaches

8.2.6 Design features of FIAT bogie, major sub-assemblies and components, LHB shell, tractive/braking force transmission, Load transmission, safety features

8.2.7 Air Spring bogies and various components of Air spring system. FIBA maintenance and troubleshooting

8.2.8 Maintenance schedules of LHB coaches. (D1, D2, D3, SSI, SSII, SSIII) and tools required for Schedule activities at pit line

8.2.9 Must change items during Shop schedule of coaches

8.2.10 Maintenance and troubleshooting of air brake system, DV, Brake Cylinder, ACP and process for Bypass of coach

8.2.11 Working principal of WSP system & its various components, WSP fault codes and corrective action, Wheel shelling

8.2.12 Maintenance of CCTV, Public Information system (PIS), Bio-vacuum toilets, Pressurized Flushing system (PFS), Electro-Pneumatic Pressurized Flushing System(EPPFS), Fire and Smoke Detection System(FSDS), Fire Detection and Suppression System(FDSS)

8.2.13 Basic knowledge of Bio-toilets: Maintenance, bacteria used and sample testing parameters

N.Rly

8.2.14 Causes of Brake binding and remedial action

8.2.15 CBC maintenance and causes for en-route uncoupling of CBCs with remedial actions to control CBC uncoupling

8.2.16 Basic knowledge of H-type CBC and its components

8.2.17 Basic Infrastructure for pit & sick-line maintenance of LHB, ICF and Vande Bharat trains

8.3 Vande Bharat Maintenance

8.3.1 Introduction to Vande Bharat Train

8.3.2 Train Composition, Basic Unit(DTC, MC,TC,NDTC..)

8.3.3 Driver Desk Unit (DDU), TCMS

8.3.4 Braking System i.e. Electro-Pneumatic brake(EP), Regenerative Braking, Automatic brakes, Parking Brakes

8.3.5 Propulsion System, Pantograph, Traction Motors, transformer, Auxiliary Transformer etc.

8.3.6 Passenger amenities items i.e. Reclining and rotating chairs, Snack table, Hand dryer, Auto soap dispenser, Foot rest, bottle holder, Pantry etc.

8.3.7 Safety and security items i.e. Emergency Talk Back Unit(ETBU), FSDS, CCTV, Automatic Doors, Passenger information system(PIS) etc.

8.4 Wagons Maintenance

8.4.1 Salient features of various types of Freight stock i.e. Open wagon, Covered Wagon, Tank wagon, container wagon, Flat wagon, Hopper wagon, Well wagon, Brake van etc.

8.4.2 New Wagon Numbering system

8.4.3 Examination of Freight stock i.e. End to End, Premium, Close Circuit(CC) and special premium rake

8.4.4 Maintenance and troubleshooting of air brake system in wagons

8.4.5 Single pipe and twin pipe air brake system

8.4.6 Salient features of CASNUB bogie and under gear components

8.4.7 Basic knowledge of various types of CASNUB bogies used on Wagons

8.4.8 Types of Nut & Bolts, Riveting, & welding in various types of wagons

8.4.9 ROH and POH of freight stock

8.5 Operations

8.5.1 Rolling in and Rolling Out Examination at nominated stations

8.5.2 Watering in trains and basic infrastructure for Quick watering

8.5.3 Clean Train Station(CTS), Terminal Rake Cleaning(TRC) & Mechanized Coach Cleaning(MCC) activities at Depot

8.5.4 Basic knowledge of OBHS activities & analysis of feedback formats used in OBHS

8.5.5 Soft skills for OBHS staff and tools required for en-route attention

8.5.6 Details and Working of Mechanized Laundry. Linen holding and management of Linen for AC coaches. Condemnation of linen

8.5.7 Pest and Rodent control in Trains and Railway Premises

8.5.8 Concept of ODC and its classification for movement

8.5.9 Duties of C&W Supervisors regarding CTS, OBHS, Linen & Pest Control

remedial

8.6 General

8.6.1 Testing of air brake for Single coach/wagon by SCTR/SWTR and rake by RTR

8.6.2 Knowledge of minimum prescribed brake Power, brake power calculation, improving brake power and issue of BPC/GDR. Brake continuity test procedure

8.6.3 Examination of CBC, Buffer, Draw Bar assembly & Screw coupling in coaching and freight Stock

8.6.4 Types of wheel used in Rolling stock, wheel defects & its prescribed limits, Tyre defect gauge

8.6.5 Application of wheel distance gauge and dimensions

8.6.6 Pairing of Wheels, wheel changing procedure in sick-line and out station

8.6.7 General idea about types of bearing used in various C&W stocks

8.6.8 Working of Graduated release air brake system

8.6.9 Train Accidents and Golden hour

8.6.10 Basic knowledge of ART, SPART, ARMV, SPARMV, 140 ton crane & Duties of C&W supervisors on accident site

8.6.11 Fire types and Firefighting equipment used in coaches

8.6.12 Attention of Hot Axle box, Train parting, Primary/Secondary coil failure, Axle Lock

8.6.13 Basic knowledge of CMM, FMM, FOIS, ICMS, e-office

8.6.14 Basics of NMG Coaches

8.6.15 Basic knowledge of computer (MS Word, MS Excel, MS Power Point, working of computer and its peripherals)

8.6.16 Basic knowledge of Industrial Safety, Fire Safety, and First Aid

8.6.17 Duties of Escorting Mechanical Supervisors and staff

------END-----

NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16016/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

Divisional Railway Manager/NR: DLI, FZR, MB, UMB, LKO & JAT
Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
CWM/Signal Shop, GZB.
CAO/C: K. Gate DLI & Satyam Complex, Trikuta Ngr/JAT.
MD/NRCH.
Chief Manager (Ptg. &Sty) Punjabi Bagh, Delhi
Dy.CMM: SSB, AMV-LKO & JUDW.
DY.CE/TMC/Line, State Entry Road, New Delhi.
Dy.CE/Bridge, CB-LKO, JUC & TKJ.

Sub: Syllabus of written examination for the post of Junior Engineer/Mech (Workshop).
Ref: (i) PCPO/NR's letter no. PCPO/Sel./2025 dated 15/05/2025.
(ii) Dy.CME/HQ's letter no. Confdl.Mech/Group C Selection/266 dated 14/07/2025.

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Please acknowledge the receipt

DA: As Above

(Udot Jha)
For General Manager (P)

Copy to:

1. All PHODs and All Officers of Personnel Deptt., HQ Office,Baroda House, New Delhi.
2. Genl. Secy./NRMU, 12 Chelmsford Road, New Delhi.
3. Genl. Secy./ URMU, 166/2, P.K.Road, New Delhi.
4. Genl. Secy./AIOBC Rly Emp. Asso. 171/A3, Basant Lane, New Delhi.
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6. Genl. Secy./ NRPOA Room No.301, HQ Office, Baroda House, New Delhi.
7. Dy.CPO/IT, HQs Office, Baroda House, NDLS for uploading on the website.
8. Dy.CPO/R&P, HQs Office, Baroda House, NDLS being policy matter.

Northern Railway

HQ Office,
Mechanical Branch

Syllabus for TQ/PQ examination for selection to the post of Junior Engineer (Mech) /Workshop

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1.1 Important National & International Events, Authors, Places & Personalities etc
1.2 Sports
1.3 "Who's Who"
1.4 Facts about Indian Railways & its Organization, Important events in Indian Railways
1.5 Current Affairs

Part-2: English

2.1 Antonyms and Synonyms
2.2 Idioms & Phrases
2.3 Tenses, Modals, Determiners, Prepositions
2.4 Active and Passive Voice
2.5 Direct and Indirect Speech
2.6 Unseen Passages

Part-3: Mathematics

3.1 Algebra
- 3.1.1 Real Numbers
- 3.1.2 Polynomials
- 3.1.3 Pair of Linear Equations in Two Variables
- 3.1.4 Quadratic Equations

3.2 Arithmetic
- 3.2.1 Problems based on age, time, work, money, Profit and Loss, and Interest

3.3 Geometry
- 3.3.1 Lines
- 3.3.2 Triangles: Pythagoras' Theorem, Midpoint Theorem, Area, Congruence of Triangles, Angle Sum Property, Exterior Angle Property; Similar Figures, Similarity of Triangles
- 3.3.3 Properties and area of Parallelogram
- 3.3.4 Circles: Area and Perimeter of Circle, Angle Subtended by a Chord at a point, Perpendicular from the Centre to a Chord, Equal Chords and their distances from the Centre, Angle subtended by an Arc of a Circle, Cyclic Quadrilaterals, Tangent to a Circle, number of Tangents from a point on a Circle, Area of Sector and Segment of a Circle
- 3.3.5 Surface Areas and Volumes of cuboid, cone, cylinder, and sphere; and Combination of Solids

3.4 Coordinate Geometry
- 3.4.1 Basics of the Cartesian system
- 3.4.2 Distance Formula

N.Rly

3.5 Introduction to Trigonometry
- 3.5.1 Trigonometric Ratios
- 3.5.2 Trigonometric Ratios of Specific Angles
- 3.5.3 Trigonometric Identities
- 3.5.4 Applications of Trigonometry: Heights and Distances

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- 3.6.1 Mean, Mode, Median of Grouped Data
- 3.6.2 Mean Deviation & Standard Deviation

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5.1 Pass Rules
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6.1 System of receiving and issuing goods from the store, local purchase, and inventory control

6.2 Stock and Non-Stock Items, PL Number

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Part-7 राजभाषा

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Part-8 Professional Knowledge

8.1 ICF Coach Maintenance

- 8.1.1 Salient features of ICF Coaches
- 8.1.2 Transportation codes for ICF coaches and coach numbering system.
- 8.1.3 IOH and POH Schedules of ICF coaches
- 8.1.4 Knowledge of safety and furnishing items
- 8.1.5 Draw and Buffing gear
- 8.1.6 Bogie components, load transmission, tractive /braking force transmission.
- 8.1.7 Air brake system & its components, Bogie Mounted Brake System (BMBC)
- 8.1.8 Must change items during IOH and POH of ICF coaches

8.2 LHB Coach Maintenance

- 8.2.1 Introduction and salient features of LHB coaches and comparison with ICF coaches
- 8.2.2 Transportation codes for LHB coaches
- 8.2.3 Design features of FIAT bogie, major sub-assemblies and components, LHB shell, tractive/braking force transmission, Load transmission, safety features
- 8.2.4 Air brake system & its components
- 8.2.5 Working principle of WSP system & its various components, WSP fault codes, and corrective action
- 8.2.6 Air Spring bogies and various components of the Air Spring system, FIBA maintenance and troubleshooting
- 8.2.7 Basic knowledge of H-type CBC and its components
- 8.2.8 Basic knowledge of Bio-toilets: Maintenance, bacteria used, and sample testing parameters
- 8.2.9 SS2 and SS3 Schedules
- 8.2.10 Must change Items during Shop Schedules
- 8.2.11 Safety & security items like CCTV, Public Information System (PIS), Fire and Smoke Detection System (FSDS), Fire Detection and Suppression System (FDSS), VESDA

8.3 Wagon

- 8.3.1 Different types of Wagons and codes
- 8.3.2 New Wagons numbering system
- 8.3.3 Salient features of various types of Freight stock i.e., Open wagon, Covered Wagon, Tank wagon, Flat wagon, Hopper wagon, Well wagon, Brake van, etc
- 8.3.4 Salient features of CASNUB bogie and its under-gear components
- 8.3.5 Single pipe and twin pipe Air Brake System
- 8.3.6 Various types of side bearers, Coupler & draft gear
- 8.3.7 Types of Nut & Bolts used in wagons, riveting & welding in wagon body
- 8.3.8 ROH and POH schedules of different types of Wagons

N.Rly

8.4 T-18 (Vande Bharat)

- 8.4.1 Basic Knowledge of T-18, Formation of T-18
- 8.4.2 Bogie used in T-18 & its components
- 8.4.3 Pantograph System
- 8.4.4 Circuit Breakers and Electrical Systems
- 8.4.5 Traction System and Motors
- 8.4.6 Main transformer and Auxiliary Systems
- 8.4.7 HVAC and Comfort Systems
- 8.4.8 Brake Systems
- 8.2.12 Emergency Systems and Communication Safety & security items like CCTV, Public Information System (PIS), Fire and Smoke Detection System (FSDS), Fire Detection and Suppression System (FDSS), VESDA
- 8.4.9 Wheels and Axles
- 8.4.10 SS1 SS2 Schedule in Workshop

8.5 DEMU

- 8.5.1 Basic knowledge of various sub-assemblies & components
- 8.5.2 IOH and POH schedule
- 8.5.3 Passenger Amenities & safety items

8.6 MEMU/EMU

- 8.6.1 Basic knowledge of various sub-assemblies & components
- 8.6.2 IOH and POH Schedule
- 8.6.3 Passenger Amenities & safety items

8.7 Diesel & Electric Loco

- 8.7.1 Basic knowledge of various sub-assemblies & components
- 8.7.2 IOH and POH Schedule

8.8 General

- 8.8.1 Basic Professional knowledge of Machinist, Welding, Black smithy, Fittings, Painting, Foundry, Millwright, Diesel Fitter Theory, Tool & Template, Hand tools, general purpose tools, special purpose tools, jig and fixtures, Heat Treatment, etc
- 8.8.2 Basic knowledge of ferrous & non-ferrous metals
- 8.8.3 Engineering Drawing
- 8.8.4 Integrated management System of ISO 9001,14001,45001,50001 & Management tool 5S, ISO-3834-2 and Green Building rating
- 8.8.5 Organizational chart, PCO organization, and functioning of its various sections
- 8.8.6 Incentive scheme
- 8.8.7 Industrial Safety, Fire Safety, Housekeeping, and First Aid
- 8.8.8 Basic knowledge & advantages of CNC machines and their major applications
- 8.8.9 Basic knowledge of computers: MS Word, MS Excel, MS PowerPoint, working of computers and peripherals
- 8.8.10 Working of Time office, Progress, Procedure for the Gate Pass, etc
- 8.8.11 Procedure of Ferrous and Non-Ferrous scrap disposal
- 8.8.12 Knowledge of hazardous waste and its disposal
- 8.8.13 Procedure of condemnation of various rolling stock
- 8.8.14 Basic knowledge of e Office CMM, FMM, and WISE
- 8.8.15 Duties, responsibilities, and role of Junior Engineer: To motivate the staff working under him for punctuality, developing a positive attitude, and increasing production

--END--

NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16017/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

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Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
CWM/Signal Shop, GZB.
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Please acknowledge the receipt

DA: As Above

16/7

(Udot Jha)
For General Manager (P)

Copy to:

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2. Genl. Secy./NRMU, 12 Chelmsford Road, New Delhi.
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N.Rly

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4.9 Light: Reflection and Refraction, Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refractive Index, Refraction through a Rectangular Glass Slab & prism, Atmospheric Refraction, Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Dispersion of White Light by a Glass Prism

4.10 Electricity: Electric Current and Circuit, Electric Potential and Potential Difference, Symbols of some commonly used components in circuit diagrams, Ohm's Law, Factors affecting the Resistance, Resistance of a System of Resistors, Heating Effect of Electric Current, Electric Power, Domestic Electric Circuits

4.11 Magnetic Effects of Electric Current: Magnetic Field and Field Lines, Magnetic Field due to a Current-Carrying Conductor, Force on a Current-Carrying Conductor in a Magnetic Field

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
5.8 Basic Knowledge about HRMS, RESS, HIMS, NPS/UPS, and UMID web portals/App

Part-6 Stores

6.1 System of receiving and issuing goods from the store, local purchase, and inventory control

6.2 Stock and Non-Stock Items, PL Number

6.3 Basic Knowledge about UDM, GEM, IMMS, IREPS

Part-7 राजभाषा

7.1 संघ की राजभाषा नीति का सामान्य परिचय

7.2 राजभाषा अधिनयम 1963

7.3 राजभाषा संशोधन नियम 1976

7.4 राजभाषा संकल्प 1968

7.5 राजभाषा से संबन्धित वार्षिक पाठ्यक्रम एवं प्रचलित शब्दावली

Part-8 Professional Knowledge

8.1 ALCO Locomotive

8.1.1 Design and construction of Diesel engine of ALCO Locomotive

8.1.2 Tri mounted fabricated bogie and all its components

8.1.3 Basic Systems: Fuel oil, Lube oil, Water cooling system and their components

8.1.4 Turbo supercharging in ALCO Locomotive

8.1.5 Testing: Load box test, self load, Auto test, Dry run test, ETS

8.1.6 IRAB brake system, sanding system

8.1.7 Basic design and features of CBC and its components

8.1.8 Various schedule maintenance: T1, T2, M1, M2, M6, M18, M24, M72

8.2 HHP Locomotive

8.2.1 Various types and features and nomenclature of GM locomotives

8.2.2 Design and construction of Engine block used in GM Locomotives

8.2.3 Basic knowledge of Design, Features and maintenance of HTSC bogie

8.2.4 Basic Systems of GM loco: Fuel oil, Lube oil and water cooling system

8.2.5 Design and overhauling of Cylinder liner, cylinder head and valve mechanism

8.2.6 Design and features of CBC and its components

8.2.7 Under gear components and their maintenance in GM Locomotives

8.2.8 CCB brake system and its components

8.2.9 Various schedules: 30 Days, 90 Days, 180 Days, Yearly 3 yearly and 6 yearly

8.3 Electric Locomotive

8.3.1 Design and construction of Electric Locomotive

8.3.2 Bogie used in electric locomotive and its components

8.3.3 Design, construction and maintenance of Pantograph

8.3.4 Design, construction and maintenance of Transformer and its auxiliaries

8.3.5 Design, working and maintenance of Tap changer

8.3.6 Under gear maintenance of electric locomotive

8.3.7 CBC and its components

8.3.8 Various maintenance schedules IA, IB, IC and TOH

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8.4 T-18 (Vande Bharat)

- 8.4.1 Basic Knowledge of T-18, Formation of T-18
- 8.4.2 Bogie used in T-18 & its components
- 8.4.3 Pantograph System Maintenance
- 8.4.4 Main transformer and Auxiliary Systems
- 8.4.5 Brake Systems and its components
- 8.4.6 Basic idea of equipment fitted in different coaches of Train-18
- 8.4.7 Fire and Smoke Detection System (FSDS), Fire Detection and Suppression System (FDSS), VESDA
- 8.4.8 Wheels and Axles
- 8.4.9 Various schedule checks of Train-18: Trip, Monthly, Quarterly and 9 monthly

8.5 DEMU

- 8.5.1 Configuration of DEMU
- 8.5.2 Bogie used in DEMU
- 8.5.3 Design and construction of diesel engine of Driving Power Car
- 8.5.4 Passenger Amenities & safety items
- 8.5.5 Basic knowledge of various under frame equipment of Driving Power Car
- 8.5.6 Various schedule checks of DPC: A check, B check, C check and D check

8.6 MEMU/EMU

- 8.6.1 Basic idea of configuration and purpose of EMU/MEMU trains
- 8.6.2 Basic knowledge of bogie, coupler and other under frame equipment
- 8.6.3 Passenger Amenities & safety items
- 8.6.4 Basic idea of schedule maintenance IA and IC of EMU/MEMU

8.7 General

- 8.7.1 Types of bolts and nuts: Lock bolts, Hex bolts, Carriage bolts and Eye bolts
- 8.7.2 Common Nut types including hex nuts, lock nuts and wing nuts
- 8.7.3 Different types of Rivets: Snap head and Counter sunk
- 8.7.4 Basic knowledge & advantages of CNC machines and their major applications
- 8.7.5 Industrial safety, Fire safety, Housekeeping and First Aid
- 8.7.6 Knowledge of the Time office, Progress, Procedure for the Gate Pass etc.
- 8.7.7 Basic knowledge of computers (MS Word, MS Excel, MS PowerPoint, working of computers and applications)
- 8.7.8 Procedure of Ferrous and Non-Ferrous scrap disposal
- 8.7.9 Knowledge of hazardous work and its disposal
- 8.7.10 Procedure of condemnation of locomotives
- 8.7.11 Basic knowledge of e-Office and SLAM portal
- 8.7.12 Duties, responsibilities, and role of Junior Engineer: To motivate the staff working under him for punctuality, developing a positive attitude and increasing production

-- END --

NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16018/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

Divisional Railway Manager/NR: DLI, FZR, MB, UMB, LKO & JAT
Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
CWM/Signal Shop, GZB.
CAO/C: K. Gate DLI & Satyam Complex, Trikuta Ngr/JAT.
MD/NRCH.
Chief Manager (Ptg. &Sty) Punjabi Bagh, Delhi
Dy.CMM: SSB, AMV-LKO & JUDW.
DY.CE/TMC/Line, State Entry Road, New Delhi.
Dy.CE/Bridge, CB-LKO, JUC & TKJ.

Sub: Syllabus of written examination for the post of Junior Engineer/Dsl/Elect.
Ref: (i) PCPO/NR's letter no. PCPO/Sel./2025 dated 15/05/2025.
(ii) Dy.CME/HQ's letter no. Confdl.Mech/Group C Selection/266 dated 14/07/2025.

*****

In reference to above subject, the syllabus of written examination for the post of Junior Engineer/Dsl/Elect in Level-06, is enclosed herewith for your information and necessary action please.

The above PS.No. is available on the website given as under:-https://nr.indianrailways.gov.in

Please acknowledge the receipt

DA: As Above

16/7

(Udot Jha)
For General Manager (P)

Copy to:

1. All PHODs and All Officers of Personnel Deptt., HQ Office,Baroda House, New Delhi.
2. Genl. Secy./NRMU, 12 Chelmsford Road, New Delhi.
3. Genl. Secy./ URMU, 166/2, P.K.Road, New Delhi.
4. Genl. Secy./AIOBC Rly Emp. Asso. 171/A3, Basant Lane, New Delhi.
5. Genl. Secy./ All India SC/ST Rly Emp. Asso. North Zone Office, Baroda House, New Delhi.
6. Genl. Secy./ NRPOA Room No.301, HQ Office, Baroda House, New Delhi.
7. Dy.CPO/IT, HQs Office, Baroda House, NDLS for uploading on the website.
8. Dy.CPO/R&P, HQs Office, Baroda House, NDLS being policy matter.

Syllabus for TQ/PQ examination for selection to the post of Junior Engineer DSL/Elect

Part 1: General Knowledge

1.1 Important National & International Events, Authors, Places & Personalities etc
1.2 Sports
1.3 "Who's Who"
1.4 Facts about Indian Railways & its Organization, Important events in Indian Railways
1.5 Current Affairs

Part-2: English

2.1 Antonyms and Synonyms
2.2 Idioms & Phrases
2.3 Tenses, Modals, Determiners, Prepositions
2.4 Active and Passive Voice
2.5 Direct and Indirect Speech
2.6 Unseen Passages

Part-3: Mathematics

3.1 Algebra
- 3.1.1 Real Numbers
- 3.1.2 Polynomials
- 3.1.3 Pair of Linear Equations in Two Variables
- 3.1.4 Quadratic Equations

3.2 Arithmetic
- 3.2.1. Problems based on age, time, work, money, Profit and Loss, and Interest

3.3 Geometry
- 3.3.1 Lines
- 3.3.2 Triangles: Pythagoras' Theorem, Midpoint Theorem, Area, Congruence of Triangles, Angle Sum Property, Exterior Angle Property; Similar Figures, Similarity of Triangles
- 3.3.3 Properties and area of Parallelogram
- 3.3.4 Circles: Area and Perimeter of Circle, Angle Subtended by a Chord at a point, Perpendicular from the Centre to a Chord, Equal Chords and their distances from the Centre, Angle subtended by an Arc of a Circle, Cyclic Quadrilaterals, Tangent to a Circle, number of Tangents from a point on a Circle, Area of Sector and Segment of a Circle
- 3.3.5 Surface Areas and Volumes of cuboid, cone, cylinder, and sphere; and Combination of Solids

3.4 Coordinate Geometry
- 3.4.1 Basics of the Cartesian system
- 3.4.2 Distance Formula

N.Rly

3.5 Introduction to Trigonometry
- 3.5.1 Trigonometric Ratios
- 3.5.2 Trigonometric Ratios of Specific Angles
- 3.5.3 Trigonometric Identities
- 3.5.4 Applications of Trigonometry: Heights and Distances

3.6 Statistics
- 3.6.1 Mean, Mode, Median of Grouped Data
- 3.6.1 Mean Deviation & Standard Deviation

Part-4: General Science

4.1 Matter in Our Surroundings: Physical Nature of Matter, Characteristics of Particles of Matter, States of Matter, Mixture, Solution, Concentration of a Solution, Compound

4.2 Atoms, Molecules and Chemical Reactions, Structure of the Atom, Valency, Atomic Number, Mass Number, Isotopes, Isobars, Laws of Chemical Combination, Chemical Equations, Types of Chemical Reactions, Oxidation and Reduction, Acids, Bases and Salts, Name of salts and compounds, Types of Oxides, Properties and Laboratory Preparation of Oxygen, Hydrogen, and Nitrogen

4.3 Metals and Non-metals (Physical Properties, Chemical Properties), Ores of Metals, Corrosion and its prevention

4.4 Carbon and Its Compounds: Bonding in Carbon, Versatile Nature of Carbon, Chemical Properties of Carbon Compounds, Important Carbon Compounds – Ethanol and Ethanoic Acid, Soaps and Detergents

4.5 Force and Laws of Motion: Motion Along a Straight Line, Uniform Motion and Non-Uniform Motion, Speed with Direction, Acceleration, Equations of Motion, Uniform Circular Motion, Balanced and Unbalanced Forces, Laws of Motion, Inertia and Mass

4.6 Gravitation: Universal Law of Gravitation, Free Fall, Mass & Weight, Thrust and Pressure, Buoyancy, Archimedes' Principle

4.7 Work and Energy: Scientific Conception of Work, Forms of Energy, Potential Energy, Potential Energy of an Object at a Height, Law of Conservation of Energy, Power, Method of Heat Transfer

4.8 Sound: Propagation of Sound, Characteristics of a Sound Wave, Reflection of Sound, Echo, Reverberation, Range of Hearing, Applications of Ultrasound

4.9 Light: Reflection and Refraction, Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refractive Index, Refraction through a Rectangular Glass Slab & prism, Atmospheric Refraction, Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Dispersion of White Light by a Glass Prism

4.10 Electricity: Electric Current and Circuit, Electric Potential and Potential Difference, Symbols of some commonly used components in circuit diagrams, Ohm's Law, Factors affecting the Resistance, Resistance of a System of Resistors, Heating Effect of Electric Current, Electric Power, Domestic Electric Circuits

4.11 Magnetic Effects of Electric Current: Magnetic Field and Field Lines, Magnetic Field due to a Current-Carrying Conductor, Force on a Current-Carrying Conductor in a Magnetic Field

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
5.8 Basic Knowledge about HRMS, RESS, HIMS, NPS/UPS, and UMID web portals/App

Part-6 Stores

6.1 System of receiving and issuing goods from the store, local purchase, and inventory control

6.2 Stock and Non-Stock Items, PL Number

6.3 Basic Knowledge about UDM, GEM, IMMS, IREPS

Part-7 राजभाषा

7.1 संघ की राजभाषा नीति का सामान्य परिचय

7.2 राजभाषा अधिनयम 1963

7.3 राजभाषा संशोधन नियम 1976

7.4 राजभाषा संकल्प 1968

7.5 राजभाषा से संबन्धित वार्षिक पाठ्यक्रम एवं प्रचलित शब्दावली

Part-8 Professional Knowledge

8.1 ALCO Locomotive

- 8.1.1 Design and construction of ALCO Locomotive
- 8.1.2 Basic knowledge of Battery charging and cranking system
- 8.1.3 Basic idea of electrical control system of ALCO loco
- 8.1.4 Basic knowledge of power transmission system
- 8.1.5 Relays and power contactors of ALCO Locomotive
- 8.1.6 Electrical Sub assembly of ALCO locomotive: Traction Alternator, Traction Motor, Auxiliary Generator, Exciter, Rectifier, Radiator Fan Motor, Dynamic Brake Fan Motor, Fuel Pump Motor, Dust Bin Blower Motor
- 8.1.7 Maintenance and overhauling of electrical equipment
- 8.1.8 Basic idea of REMMLOT
- 8.1.9 Testing of Engines: Load Box testing, self load, ETS test
- 8.1.10 Idea of maintenance schedules T1, M1, M2 M12, M18, M24 & M72

8.2 HHP Locomotive

- 8.2.1 Basic knowledge of Electric equipment in GM locos
- 8.2.2 Basic knowledge of Electric control system
- 8.2.3 Starting circuit and components
- 8.2.4 Running maintenance of Electric rotating machines and rectifiers
- 8.2.5 Overhauling of Electric rotating machines
- 8.2.6 Basic knowledge of Power transmission in GM loco
- 8.2.7 Working of VCD, Auto flasher light and sanding system
- 8.2.8 Various types of GM Locomotives: WDG4, WDP4, WDP4D
- 8.2.9 Testing of Loco: Load box test, self load, Auto test
- 8.2.10 Various schedule: 30 Days, 90 Days, 180 Days, Yearly, 3 yearly and 6 yearly

8.3 Electric Locomotive

- 8.3.1 Basic knowledge of General construction of Electric Locomotive
- 8.3.2 Basic knowledge of Traction equipment: Bridge rectifier block, Traction motor, Smoothing reactor
- 8.3.3 Safety relays and their working
- 8.3.4 Running maintenance of all rotating machines and static devices.
- 8.3.5 Basic knowledge of Auxiliary electric machines: MVMT, MVSI, MVRH, MVSL, MCP, MCPA and MPH

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8.3.6 Overhauling of all electric equipment
8.3.7 Testing of VCD, Sanding and Auto flasher
8.3.8 Testing of Locomotive: Tripping via different faults, Notch progression and regression
8.3.9 Various maintenance schedules: IA, IB, IC and TOH

8.4 T-18 (Vande Bharat)
8.4.1 Basic Knowledge of T-18, Formation of T-18
8.4.2 Basic knowledge various equipment fitted in different coaches
8.4.3 Safety and passenger amenity items
8.4.4 Circuit Breakers and Electrical Systems
8.4.5 Traction System and Motors
8.4.6 Main transformer and Auxiliary Systems
8.4.7 HVAC and Comfort Systems
8.4.8 Emergency Systems and Communication Safety & security items like CCTV, Public Information System (PIS)
8.4.9 Various maintenance schedule: Trip, Monthly, Quarterly and 9 Monthly

8.5 DEMU
8.5.1 Configuration of DEMU trains
8.5.2 Electrical control system of driving power car
8.5.3 Basic knowledge of Rectifier, Relays, Power contactors and Battery box
8.5.4 Passenger Amenities & safety items
8.5.5 Maintenance checks of DPC: A check, B check, C check and D check

8.6 MEMU/EMU
8.6.1 Basic knowledge of working of EMU/MEMU trains
8.6.2 Basic configuration of EMU/MEMU trains
8.6.3 Battery charging and Auxiliary system
8.6.4 Passenger Amenities & safety items
8.6.5 Various maintenance schedules: IA and IC

8.7 General
8.7.1 Basic knowledge of Voltage, Current, Resistance and Electrical Power
8.7.2 Various type of Batteries used in different locomotive and its charging
8.7.3 Industrial Safety, Fire Safety, Housekeeping and First Aid
8.7.4 Basic knowledge & advantages of CNC machines and their major applications
8.7.5 Basic knowledge of e-office and SLAM portal
8.7.6 Basic knowledge of computers: MS Word, MS Excel, MS PowerPoint, working of computers and peripherals
8.7.7 Knowledge of the Time office, Progress, Procedure for the Gate Pass etc
8.7.8 Procedure of Ferrous and Non-Ferrous scrap disposal
8.7.9 Knowledge of hazardous work and its disposal
8.7.10 Procedure of condemnation of various rolling stock
8.7.11 Duties, responsibilities, and role of Junior Engineer: To motivate the staff working under him for punctuality, developing a positive attitude and increasing production

-- END --

NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16019/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

Divisional Railway Manager/NR: DLI, FZR, MB, UMB, LKO & JAT
Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
CWM/Signal Shop, GZB.
CAO/C: K. Gate DLI & Satyam Complex, Trikuta Ngr/JAT.
MD/NRCH.
Chief Manager (Ptg. &Sty) Punjabi Bagh, Delhi
Dy.CMM: SSB, AMV-LKO & JUDW.
DY.CE/TMC/Line, State Entry Road, New Delhi.
Dy.CE/Bridge, CB-LKO, JUC & TKJ.

Sub: Syllabus of written examination for the post of Tech-III/C&W in Level-02.
Ref: (i) PCPO/NR's letter no. PCPO/Sel./2025 dated 15/05/2025.
(ii) Dy.CME/HQ's letter no. Confdl.Mech/Group C Selection/266 dated 14/07/2025.

*****

In reference to above subject, the syllabus of written examination for the post of Tech-III/C&W in Level-02, is enclosed herewith for your information and necessary action please.

The above PS.No. is available on the website given as under:-https://nr.indianrailways.gov.in

Please acknowledge the receipt

DA: As Above

(Udot Jha)
For General Manager (P)

Copy to:

1. All PHODs and All Officers of Personnel Deptt., HQ Office,Baroda House, New Delhi.
2. Genl. Secy./NRMU, 12 Chelmsford Road, New Delhi.
3. Genl. Secy./ URMU, 166/2, P.K.Road, New Delhi.
4. Genl. Secy./AIOBC Rly Emp. Asso. 171/A3, Basant Lane, New Delhi.
5. Genl. Secy./ All India SC/ST Rly Emp. Asso. North Zone Office, Baroda House, New Delhi.
6. Genl. Secy./ NRPOA Room No.301, HQ Office, Baroda House, New Delhi.
7. Dy.CPO/IT, HQs Office, Baroda House, NDLS for uploading on the website.
8. Dy.CPO/R&P, HQs Office, Baroda House, NDLS being policy matter.

Syllabus for examination for selection to the post of Tech Gr III /C&W

Part 1: General Knowledge

1.1 Important National & International Events, Authors, Places & Personalities etc
1.2 Sports
1.3 "Who's Who"
1.4 Facts about Indian Railways & its Organization, Important events in Indian Railways
1.5 Current Affairs

Part-2: English

2.1 Antonyms and Synonyms
2.2 Tenses, Modals, Determiners, Prepositions
2.3 Active and Passive Voice
2.4 Direct and Indirect Speech

Part-3: Mathematics

3.1 Algebra
- 3.1.1. Number System
- 3.1.2. Basic Algebra
- 3.1.3. Quadratic Equations

3.2 Arithmetic
- 3.2.1. Problems based on age, time, work, and money
- 3.2.2. Profit & Loss
- 3.2.3. Simple and Compound Interest
- 3.2.4. Ratio and Proportion

3.3 Triangles
- 3.3.1. Area
- 3.3.2. Pythagoras' Theorem
- 3.3.3. Angle Sum Property, Exterior Angle Property

3.4 Area and Volume
- 3.4.1. Areas Related to Square, Rectangle, Triangle, Circles, Parallelogram, and Areas of Sector
- 3.4.2. Volume of Cylinder, Cube, Cuboid, Cone, etc.

Part 4: General Science

4.1 Matter in Our Surroundings: Physical Nature of Matter, Characteristics of Particles of Matter, States of Matter, Mixture, Solution, Concentration of a Solution, Compound

4.2 Atoms, Molecules and Chemical Reactions, Structure of the Atom, Valency, Atomic Number, Isotopes, Isobars, Laws of Chemical Combination, Chemical Equations, Types of Chemical Reactions, Oxidation and Reduction, Acids, Bases and Salts, Names of the Salts and Compounds

4.3 Metals and Non-metals (Physical Properties, Chemical Properties), Ores of Metals, Corrosion and its prevention

N.Rly

4.4 Force and Laws of Motion: Motion Along a Straight Line, Uniform Motion and Non uniform Motion, Speed with Direction, Acceleration, Equations of Motion, Uniform Circular Motion, Balanced and Unbalanced Forces, Laws of Motion

4.5 Work and Energy: Scientific Conception of Work, Forms of Energy, Potential Energy, Potential Energy of an Object at a Height, Law of Conservation of Energy, Power, Method of Heat Transfer

4.6 Light – Reflection and Refraction, Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refractive Index, Refraction through a Rectangular Glass Slab & Prism, Atmospheric Refraction, Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Dispersion of White Light by a Glass Prism

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
5.8 Basic Knowledge about HRMS, RESS, HIMS, and NPS web portals/App

Part-6 राजभाषा

6.1 संघ की राजभाषा नीति का सामान्य परिचय
6.2 राजभाषा अधिनयम 1963
6.3 राजभाषा संशोधन नियम 1976
6.4 राजभाषा संकल्प 1968
6.5 राजभाषा से संबन्धित वार्षिक पाठ्यक्रम एवं प्रचलित शब्दावली

Part- 7 Professional Knowledge

7.1 ICF Coach Maintenance
- 7.1.1 Salient features of ICF Coaches
- 7.1.2 Knowledge of safety and furnishing items.
- 7.1.3 Pattern of Coaching maintenance as per RPC-IV
- 7.1.4 Transportation codes for ICF coaches and coach numbering system
- 7.1.5 Maintenance schedules periodicity of ICF coaches (A, B, C, IOH and POH)

7.2 LHB Coach Maintenance
- 7.2.1 Introduction and salient feature of LHB coaches and comparison with ICF coaches
- 7.2.2 Pattern of Coaching maintenance as per RPC-IV
- 7.2.3 Examination of Coaching stock: Primary, Terminal and Secondary
- 7.2.4 Knowledge of safety and furnishing items in coaches
- 7.2.5 Transportation codes for LHB coaches
- 7.2.6 Maintenance schedules of LHB coaches. (D1, D2, D3) and tools required for Schedule activities at pit line
- 7.2.7 Basic knowledge of Bio-toilets: Maintenance, bacteria used and sample testing parameters
- 7.2.8 Causes of Brake binding and remedial action
- 7.2.9 CBC maintenance and causes for en-route uncoupling of CBCs with remedial actions to control CBC uncoupling

7.3 Vande Bharat Maintenance

7.3.1 Introduction to Vande Bharat Train

7.3.2 Train Composition, Basic Unit (DTC, MC,TC,NDTC etc.)

7.3.3 Driver Desk Unit (DDU), TCMS

7.3.4 Passenger amenities items i.e. Reclining and rotating chairs, Snack table, Hand dryer, Auto soap dispenser, Foot rest, bottle holder, Pantry etc.

7.3.5 Safety and security items i.e. Emergency Talk Back Unit(ETBU), FSDS, CCTV, Automatic Doors, Passenger information system(PIS) etc.

7.4 Wagons Maintenance

7.4.1 Salient features of various types of Freight stock i.e. Open wagon, Covered Wagon, Tank wagon, container wagon Flat wagon, Hopper wagon, Well wagon, Brake van etc.

7.4.2 New Wagon Numbering system

7.4.3 Examination of Freight stock i.e. End to End, Premium, Close Circuit(CC) and special premium rake

7.4.4 Maintenance and troubleshooting of air brake system in wagons

7.4.5 Types of Nut & Bolts, Riveting, & welding in various types of wagons

7.4.6 ROH and POH of freight stock

7.5 Operations

7.5.1 Rolling in and Rolling Out Examination at nominated stations

7.5.2 Watering in trains and basic infrastructure for Quick watering

7.5.3 Clean Train Station(CTS), Terminal Rake Cleaning(TRC) & Mechanized Coach Cleaning(MCC) activities at Depot

7.5.4 Basic knowledge of OBHS activities & analysis of feedback formats used in OBHS

7.5.5 Soft skills for OBHS staff and tools required for en-route attention

7.5.6 Details and Working of Mechanized Laundry. Linen holding and management of Linen for AC coaches. Condemnation of linen

7.5.7 Pest and Rodent control in Trains and Railway Premises

7.5.8 Duties of C&W staff regarding CTS, OBHS, Linen & Pest Control

7.6 General

7.6.1 Testing of air brake for Single coach/wagon by SCTR/SWTR and rake by RTR.

7.6.2 Knowledge of minimum prescribed brake Power, brake power calculation, improving brake power and issue of BPC/GDR. Brake continuity test procedure

7.6.3 Examination of CBC, Buffer, Draw Bar assembly & Screw coupling in coaching and freight Stock

7.6.4 Types of wheel used in Rolling stock, wheel defects & its prescribed limits, Tyre defect gauge

7.6.5 Application of wheel distance gauge and dimensions

7.6.6 Pairing of Wheels, wheel changing procedure in sick-line and out station

7.6.7 Fire types and Firefighting equipment used in coaches

7.6.8 Attention of Hot Axle box, Train parting, Primary/Secondary coil failure, Axle Lock

7.6.9 Basic knowledge of CMM, FMM, FOIS, ICMS

7.6.10 Basic knowledge of Computer (Basic MS Word, MS Excel)

7.6.11 Basic knowledge of Industrial safety, fire safety and first aid

7.6.12 Duties of Escorting Mechanical staff

------END-----

NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16020/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

Divisional Railway Manager/NR: DLI, FZR, MB, UMB, LKO & JAT
Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
CWM/Signal Shop, GZB.
CAO/C: K. Gate DLI & Satyam Complex, Trikuta Ngr/JAT.
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Northern Railway

HQ Office,
Mechanical Branch

Syllabus for examination for selection to the post of Tech Gr III /Workshop

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- 3.3.2 Pythagoras' Theorem
- 3.3.3 Angle Sum Property, Exterior Angle Property

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- 3.4.1 Areas Related to Square, Rectangle, Triangle, Circles, Parallelogram, and Area of Sector
- 3.4.2 Volume of Cylinder, Cube, Cuboid, Cone, etc.

Part 4: General Science

4.1 Matter in Our Surroundings: Physical Nature of Matter, Characteristics of Particles of Matter, States of Matter, Mixture, Solution, Concentration of a Solution, Compound
4.2 Atoms, Molecules and Chemical Reactions, Structure of the Atom, Valency, Atomic Number, Isotopes, Isobars, Laws of Chemical Combination, Chemical Equations, Types of Chemical Reactions, Oxidation and Reduction, Acids, Bases and Salts, Names of the Salts and Compounds
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4.4 Force and Laws of Motion: Motion Along a Straight Line, Uniform Motion and Nonuniform Motion, Speed with Direction, Acceleration, Equations of Motion, Uniform Circular Motion, Balanced and Unbalanced Forces, Laws of Motion

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4.6 Light – Reflection and Refraction, Spherical Mirrors, Sign Convention for Reflection by Spherical Mirrors, Refractive Index, Refraction through a Rectangular Glass Slab & Prism, Atmospheric Refraction, Refraction by Spherical Lenses, Image Formation by Lenses, The Human Eye, Dispersion of White Light by a Glass Prism

Part-5: Establishment Rules

5.1 Pass Rules
5.2 Leave Rules
5.3 Payment of Wages Act
5.4 Hours of Employment Regulations
5.5 D&AR (Disciplinary & Appeal Rules)
5.6 Workmen's Compensation Act
5.7 Factory Act
5.8 Basic Knowledge about HRMS, RESS, HIMS, and NPS web portals/App

Part-6 राजभाषा

6.1 संघ की राजभाषा नीति का सामान्य परिचय
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6.3 राजभाषा संशोधन नियम 1976
6.4 राजभाषा संकल्प 1968
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Part-7 Professional Knowledge

7.1 ICF Coach Maintenance
- 7.1.1 Salient features of ICF Coaches.
- 7.1.2 IOH and POH Schedules of ICF coaches
- 7.1.3 Knowledge of safety and furnishing items.
- 7.1.4 Transportation codes for ICF coaches and the coach numbering system.
- 7.1.5 Must change items during IOH and POH of ICF coaches.

7.2 LHB Coach Maintenance
- 7.2.1 Introduction and salient features of LHB coaches and comparison with ICF coaches.
- 7.2.2 Transportation codes for LHB coaches
- 7.2.3 Basic knowledge of Bio-toilets: Maintenance, bacteria used, and sample testing parameters.
- 7.2.4 SS2 and SS3 Schedules
- 7.2.5 Must change Items during Shop Schedules
- 7.2.6 Safety & security items like CCTV, Public Information System (PIS), Fire and Smoke Detection System (FSDS), Fire Detection and Suppression System (FDSS), VESDA

7.3 Wagon

- 7.3.1 Different types of Wagons and codes
- 7.3.2 New Wagons numbering system
- 7.3.3 Salient features of various types of Freight stock, i.e., Open wagon, Covered Wagon, Tank wagon, Flat wagon, Hopper wagon, Well wagon, Brake van, etc.
- 7.3.4 Salient features of CASNUB bogie and its under-gear components
- 7.3.5 Types of Nut & Bolts used in wagons, riveting & welding in wagon body
- 7.3.6 POH schedules of different types of Wagons

7.4 T-18 (Vande Bharat)

- 7.4.1 Basic Knowledge of T-18, Formation of T-18
- 7.4.2 Emergency Systems and Communication Safety & security items like CCTV, Public Information System (PIS), Fire and Smoke Detection System (FSDS), Fire Detection and Suppression System (FDSS), VESDA
- 7.4.3 SS1 SS2 Schedule in Workshop

7.5 DEMU

- 7.5.1 Basic knowledge of various assemblies & components
- 7.5.2 IOH and POH schedule
- 7.5.3 Passenger Amenities & safety items

7.6 MEMU/EMU

- 7.6.1 Basic knowledge of various assemblies & components
- 7.6.2 IOH and POH Schedule
- 7.6.3 Passenger Amenities & safety items

7.7 Diesel & Electric Loco

- 7.7.1 Basic knowledge of various assemblies & components
- 7.7.2 IOH and POH Schedule

7.8 General

- 7.8.1 Basic Professional knowledge of Machinist, Welding, Black smithy, Fittings, Painting, Carpentry, Foundry, Millwright, Diesel Fitter Theory, Use of Measuring Tools, Lifting and Handling Devices, Tool & Template, Hand tools, general purpose tools, special purpose tools, jig and fixtures, Heat Treatment, etc
- 7.8.2 Types of bolts and nuts: hex bolts, carriage bolts, and eye bolts, hex nuts, lock nuts, and wing nuts
- 7.8.3 Basic Knowledge of Electrical Parameters
- 7.8.4 Basic knowledge of ferrous & non-ferrous metals
- 7.8.5 Reading of Drawings
- 7.8.6 Material Specifications, Properties, Bearings, Lubricants, and Drives
- 7.8.7 Arc Welding, Gas Welding & Cutting
- 7.8.8 Knowledge and operations of machines
- 7.8.9 Knowledge of Different Types of coaches, wagons & bogies
- 7.8.10 Familiarisation with components of coach, wagon & Bogies, and Passenger Information System (PIS)
- 7.8.11 Knowledge of Air Brake System of wagon & coaches
- 7.8.12 Organizational chart, PCO organization, and functioning of its various sections
- 7.8.13 Incentive scheme
- 7.8.14 Industrial Safety, Fire Safety, Housekeeping, and First Aid
- 7.8.15 Basic knowledge of computers (MS Word, Excel)
- 7.8.16 Basic Knowledge of CNC Machines
- 7.8.17 Knowledge of hazardous work and its disposal

-End-

NORTHERN RAILWAY
(Personnel Department)

Headquarters Office,
Baroda House,
New Delhi.

P.S. No. 16021/2025

NO. 752-E/Mech Policy/EIIC

DATE: 16/07/2025

Divisional Railway Manager/NR: DLI, FZR, MB, UMB, LKO & JAT
Chief Workshop Manager/NR: AMV-LKO, CB-LKO, JUDW, ASR & RCNK-SNP,
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Northern Railway

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N.Rly

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Part-7 Professional Knowledge

7.1 ALCO Locomotive
- 7.1.1 Basic Design and construction of ALCO Locomotive
- 7.1.2 Basic knowledge of all Electric equipment
- 7.1.3 Testing of Loco: Load box test, self load, Auto test, ETS
- 7.1.4 Various maintenance schedules: T1, M1, M2, M6, M12, M24, M72

7.2 HHP Locomotive
- 7.2.1 Basic knowledge of Electric equipment in GM locos
- 7.2.2 Various types of HHP Locomotives: WDG4, WDP4, WDP4D
- 7.2.3 Running maintenance of Electric rotating machines and rectifiers
- 7.2.4 Purpose of VCD, Auto flasher light and sanding system
- 7.2.5 Various schedule: 30 Days, 90 Days, 180 Days, Yearly, 3 yearly and 6 yearly

7.3 Electric Locomotive
- 7.3.1 Basic knowledge of General construction of Electric Locomotive
- 7.3.2 Running maintenance of all rotating machines and static devices
- 7.3.3 Basic knowledge of All electric equipment
- 7.3.4 Schedule maintenance of Electric loco IA, IB, IC and TOH schedule

7.4 DEMU

7.4.1 Configuration of DEMU trains

7.4.2 All electrical equipment fitted in DPC

7.4.3 Schedule maintenance of DPC: A check, B check, C check and D check

7.5 EMU/MEMU

7.5.1 Basic Idea of working of EMU/MEMU trains

7.5.2 Basic configuration of EMU/MEMU

7.5.3 Schedule maintenance IA and IC

7.6 Train-18 (Vande Bharat)

7.6.1 Basic knowledge of configuration of T-18 train

7.6.2 End basic unit and Middle basic unit

7.6.3 Working in schedules Trip, monthly, quarterly and 9 monthly

7.7 General

7.7.1 Various type of Batteries used in different locomotives

7.7.2 Working principles of electric rotating machines: Motor and Alternator

7.7.3 Basic knowledge of Computer: MS word, MS Excel

7.7.4 Industrial safety, Housekeeping, Fire safety and First aid

7.7.5 Basic knowledge of CNC machines

7.7.6 Basic knowledge of hazardous waste and its disposal

-- END --

NORTHERN RAILWAY
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Part-7 Professional Knowledge

7.1 ALCO Locomotive
- 7.1.1 Design and construction of ALCO Locomotive
- 7.1.2 Basic knowledge of Components of engine block
- 7.1.3 Basic idea of Bogie and CBC
- 7.1.4 Various maintenance schedules of ALCO: T1, M1, M2, M6, M12, M24, M72

7.2 HHP Locomotive
- 7.2.1 Basic design and construction of HHP locomotive
- 7.2.2 Various types of HHP Locomotives: WDGG4, WDP4 & WDP 4D
- 7.2.3 Basic knowledge of components of engine block of HHP locomotive
- 7.2.4 Various maintenance schedules: 30 Days, 90 days, 180 Days, Yearly, 3 yearly and 6 yearly

of Metals,

7.3 Electric Locomotive

- 7.3.1 Design and construction of Electric locomotive
- 7.3.2 Bogies and CBC used in Electric Locomotive
- 7.3.3 Working of earthing switch
- 7.3.4 Basic knowledge of Transformer
- 7.3.5 Basic knowledge of Pantograph
- 7.3.6 Various maintenance schedules: IA, IB, IC and TOH

7.4 T-18 (Vande Bharat)

- 7.4.1 Basic Knowledge of T-18, Formation of T-18
- 7.4.2 Basic Idea of Bogie used in T-18 and its components
- 7.4.3 Various maintenance schedules: Trip, Monthly, Quarterly and 9 Monthly

7.5 DEMU

- 7.5.1 Basic knowledge of various assemblies & components
- 7.5.2 Basic idea of configuration of DEMU trains
- 7.5.3 Passenger Amenities & safety items
- 7.5.4 Various schedule checks: A check, B check, C check and D check

7.6 MEMU/EMU

- 7.6.1 Basic knowledge of various assemblies & components
- 7.6.2 Configuration of coaches in EMU/MEMU trains
- 7.6.3 Passenger Amenities & safety item
- 7.6.4 Various maintenance schedules IA and IC

7.7 General

- 7.7.1 Types of bolts: hex bolts, carriage bolts, and eye bolts
- 7.7.2 Common nut types hex nuts, lock nuts, and wing nuts
- 7.7.3 Basic knowledge of Rivets: Snap head and Counter sunk
- 7.7.4 Material specifications, Properties, Bearings, Lubricants and Drives
- 7.7.5 Arc Welding, Gas Welding & Cutting
- 7.7.6 Industrial safety, Fire Safety, Housekeeping and First Aid
- 7.7.7 Basic knowledge of computers: MS Word, MS Excel
- 7.7.8 Basic knowledge of CNC machines
- 7.7.9 Knowledge of hazardous waste and its disposal

-- END --