



दक्षिण पूर्व मध्य रेलवे
South East Central Railway



कार्मिक विभाग, प्रथम तल, महाप्रबंधक कार्यालय, बिलासपुर (छ. ग.) 495004
PERSONNEL DEPARTMENT, 1st FLOOR, GM's OFFICE, BILASPUR (C.G.) 495004

No.P-HQ/CON/452/EL-30%/e-66114/ **512**

Dated:04/07/2022

AGM, SECRETARY TO GM/SECR, PCEE, CAO/Con, SDGM /SECR
CEDE, CELE, CEGE, SDGM/SECR,
CSO, CAO (Con), CEE (Con), CPO (A)/SECR.
DRM/BSP, R, NGP, CWM/WRS/R & CWM/WS/MIB.
DG/NAIR/ VADODARA
Dy CPO (HQ), Dy CPO (Con). /BSP, SPO/HQ.
GM (P) SER/GRC, GM (P) ECoR /BBS, GM (P) CORE/ALD

Sub: - Selection for formation of a panel to Group "B" post of ADEE/AXEE against 30% (8th cycle) LDCE quota of Electrical department in SEC Railway.

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It is proposed to conduct a selection for formation of panel ADEE/AXEE (Group-B) vacancies against 30% LDCE (8th cycle), PB-2 Rs. 9300-34800/-, Grade Pay Rs. 4800/- (6th PC) (Pay Matrix Level-8 of 7th PC) from willing and eligible employees of Electrical Department, having lien in S.E.C.Railway. The final zone of consideration and exact date of written test will be intimated later. The assessment of vacancies against 30% LDCE quota, as approved by GM/SECR is as follows.

Post	Vacancies			
	UR	SC	ST	Total
ADEE/AXEE(Gr "B")	02	00	01	03

1. **Eligibility Condition:-** For Group "B" selection (30% LDCE quota), Group "C" employees working in grade the minimum of which is in PB-2 Rs. 9300-34800 + GP Rs. 4200/- (6th PC) or Level-06 (in 7th PC) and above with five (05) years of non fortuitous service in grade as on **26/04/2022** (including non fortuitous service rendered in the corresponding pre revised grades) of Electrical department including running staff of combined seniority in Electrical/ Mechanical department (for running staff equated stationary grade vide Estt.Srl. No.90/2000, RBE No.92/2015 is enclosed in **Annexure "B"**) are eligible to participate in the above 30% LDCE examination in terms of Railway Board's letter Number E(GP)99/2/22 dated 29.03.2010 (RBE No.46/2010), circulated under SECR's Estt. Rule No. 55/2010 and R.B.E. No. 216/2019 circulated under SECR's Estt Rule No. 359/2019.

2. Staff whose lien is maintained in S E C Railway is only eligible to appear in the said selection. Besides, those employees whose lien are maintained in S E C Railway , but working outside the jurisdiction of S.E.C.Railway are also eligible provided they submit their applications through the Personnel Branch of the division/unit where their lien is maintained with proper certificate of lien by concerned division/Units. In case any candidate is on leave or on deputation to other Railways/Units or on sick list, the controlling officer concerned should send necessary

advice to the authority under whom he is working or the medical authority as the case may be and necessary acknowledgement obtained. This may be ensured to avoid any representation later on this issue.

3. **Date of submission of application and consolidated statement:** - Application of willing staff, fulfilling the above conditions should submit their application to concerned Personnel Officer /Controlling Officer on or before **27/07/2022 in "Annexure-A"**. The concerned Personnel Officer, after receipt of such applications should scrutinize the candidatures of the applicants and send the names of the eligible staffs only in consolidated statement as per proforma attached as **Annexure- "B"** so as to reach this office latest by **04/08/2022**. The concerned Personnel Officer should ensure that all the columns of the enclosed proforma are properly filled in before sending the statement to this office.

4. Applications received directly from the staff concerned will not be entertained by this office. Concerned Personnel Officers/ Controlling Officers should ensure that applications received by them after the closing date mentioned above are not forwarded to HQ under any circumstances. All application of construction organization should be forwarded by Dy CPO/CON/BSP. Names of those staff who have not fulfilled the eligibility criteria as mentioned above need not be forwarded to this office. It may also be noted that incomplete statements furnished by the divisions/ units will not be entertained.

5. In case any employee has been posted to another organization on transfer/deputation basis, it will be the responsibility of their parent Office/ Establishment to ensure that the notification issued is sent to that establishment/ organization enjoining upon it to bring the same to the notice of the concerned employee(s). A written confirmation should be obtained from these organizations and sent to the PCPO (Gaz) at the Headquarters for being kept in records.

6. Scheme of Examination/ Selection Procedure:-

In terms of Railway Board's letter No.E(GP)2022/2/4, Date:28/06/2022, detailed instructions have been issued regarding conducting of selection for promotions to Group-B posts (introduction of Centralized Computer Based objective type examination (CBT) in all departments having organized services. Accordingly, forthcoming 30% LDCEs selection will be conducted through centralized CBT in all organized departments and it shall be conducted by **DG/ NAIR** who shall coordinate with the concerned zones/ PUs for its smooth conduct detailed as under.

i. LDCE will be one stage only and will comprise of only 1 Paper with the following set up :

(a) Single paper of 150 marks comprising 100 % Objective type Multiple Choice Questions with following distribution of marks.

(a i) Technical (Professional) subject	: 80 marks
(a ii) General Knowledge including optional Questions of 15 marks on Official language Policy & Rules	: 40 marks
(a iii) Establishment & Financial Rules	: 30 marks

(b) Qualifying Marks	: 90
(c) Duration	: 03 Hours



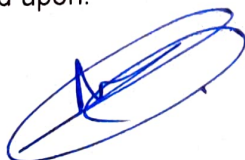
- ii. Question Paper will have 175 questions out of which 150 questions are to be attempted.
- iii. 1 mark will be allotted for every correct answer . There shall be negative marking for incorrect answers and 1 / 3rd of Marks allotted for each question will be deducted for every wrong answer.
- iv. **Syllabus**:- Syllabus for LDCs for Organised services has already been prescribed by Board. However, as it is based on old pattern when there were two Papers - Paper - I and Paper - II in the LDCs, the Centralised CBT shall be held from the said syllabus after amalgamating the topics prescribed in Paper - I and Paper - II of respective syllabi.
- v. Optional Questions on Official Language policy and Official Language Rules in the LDCs shall be included in terms of provision contained in Para 204.3 of IREM Vol.
- vi. Examination for 30 % LDCs will be held on a single day only. On the same day exam for the post of APO will be held in the second shift so that candidates who have appeared in exam for AMM / ACM / AOM in the first shift and also want to appear for APO can do so in second shift. Similarly, exam for AME and AEE will also be held in different shifts with a gap of 3 hours between both the shifts.
- vii. Railway - wise list of candidates along with marks scored by them in the written examination will be prepared by DG / NAIR assigned the task of conducting the exams and will be furnished to respective Zones / PUs.
- viii. Medical and viva-voce of successful candidates will be conducted by the respective zones and thereafter final panel will be issued by them according to the vacancies on the basis of merit positively within one month from the date of receipt of result from NAIR.
- ix. CBT for 30% LDCs for a particular department for Zones/ PUs will be held on the same day across Indian Railways. Thereafter no request for a supplementary exam shall be entertained in any condition.

07. It may be noted that this post (AEE/AXEE) is a safety category post and accordingly candidates are required to qualify the prescribed medical fitness before appearing in viva-voce. Without medical fitness certificate, candidates will not be eligible for attending the viva-voce.

08. The pre-selection coaching for a period of 3-4 weeks to the reserved community candidates should be arranged by the Executive side i.e. PCEE/SECR. This training is treated as mandatory and refusal, if any should be taken in writing. Completion of Pre-selection coaching should be reported to the PCPO/Gaz/SECR positively.

09. The Controlling Officers, Dy.CPOs/Sr.DPOs/DPOs/APOs should ensure that the APARs for the last 05 (five) years completed in all respects and updated Service Records of the candidates who volunteer for the above selection, are available with them in advance to ensure prompt supply to PCPO(Gaz) at a short notice.

10. If any prospective candidate has any issue/ suggestion/ representation, the same can be submitted to the Gazetted Conf. Section by **19/07/2022**, which will be examined with reference to extant rules. Any representation after the closure of notification will not be acted upon.



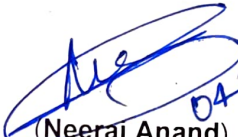
11. The concerned staff of the Divisions/ Units who deal with the staff establishment matters, should circulate the contents of this Notification to all concerned and invite applications from all the willing and eligible staff including those who are on Medical/ Leave/ Training/ Deputation and forward the consolidated statement in the proforma, prescribed as **Annexure "B"** along with the individual applications by the concerned Personnel Officers to this office. They may also ensure that the notification and all subsequent notification of this selection are circulated to all sub-units located in their territorial jurisdiction.

12. **Syllabus for professional paper for LDCES:** The Syllabus prescribed for selection for the post of ADEE/AXEE (Group 'B') (LDCE-30%) in Electrical Department of written examination after amalgamating the topics of Paper-I and Paper-II is enclosed as **Annexure-"C"**, which may be circulated widely among the all concerned and may be used while imparting pre-selection coaching also. It may be noted that this syllabus is indicative and not necessarily exhaustive.

The notification is also available in this Railway's website- <http://www.secr.indianrailways.gov.in/Recruitment-HQ-Gazetted> Section. All unit-In charge and concerned Personnel Officers shall ensure that the notification is given wide publicity and also pasted in the Notice board.

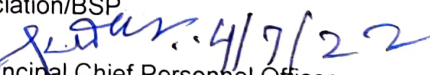
Please acknowledge receipt

Encl: As above


(Neeraj Anand)
Deputy Chief Personnel Officer(Gaz)
for Principal Chief Personnel Officer

Copy forwarded for information and necessary action to:-

1. PS TO PCEE/SECR
2. Dy CPO (HRD), Dy CPO (HQ), Dy CPO (Con).
3. Sr.DPO/BSP,R & NGP, Sr DEE(OP),(TRD), (G)/BSP, R, NGP
4. APO/HQ, WPO/WRS/R & APOWS/MIB/, Principal MDZTI /BSP
6. GS/DPMRMC/BSP, GS/SECRPOA, & GS/AISC-ST/Association/BSP
7. Notice Board


for Principal Chief Personnel Officer

ANNEXURE "B"**PROFORMA -30% (ADEE/ AXEE)**

1	2	3	4	5	6	7	8	9
Sr.No	Name	Present Designation /Station	Lien	Community (UR /SC/ ST)	Date of birth	Date of appointment & designation, grade to which appointed	P F No	Qualification

10	11	12	13	14	15	16
Present Grade/ Scale	Date of regular promotion in present Grade /scale	Regular promotion in scale GP Rs.2400/-, GP Rs.4200/-, GP Rs.4600/-, Should be equated with as given below (NOTE)	Regular promotion/ appointment in scale Rs. 6500-10500/- (5 th PC) (pre-revised)/ GP-4600/- (6 th PC) Level-7 (7 th PC)	Present grade Regular/ Ad-hoc	Remarks Eligible/ Not eligible	Willing/ Unwilling

Signature of controlling officer/
Concerned Personnel Officer

NOTE: Comparison of grades of running staff with those of stationary staff for the purpose of promotion/ selection to Group 'B' posts, in terms of Estt. Rule No.133/2015, circulated vide Board's letter No. E(GP) 2005/2/87, RBE No. 92/2015, Date:18.08.2015, may strictly be followed while forwarding the applications of employees.

Designation	Scale of Pay Applicable (VI CPC)	Scale of Stationary Post to which should be equated (VI CPC)
Loco Pilot (Mail/Exp.)	PB-2 + GP Rs. 4200+ 1000 addl. Allowance	PB-2 + GP Rs 4600
Loco Pilot (Passenger)	PB-2 + GP Rs. 4200 + 500 addl. Allowance	PB-2 + GP Rs. 4600
Loco Pilot (Goods)	PB-2 + GP Rs. 4200	PB-2 + GP Rs. 4600
Loco Pilot (Shunting) I (NF)	PB-2 + GP Rs. 4200	PB-2 + GP Rs. 4200
Loco Pilot (Shunting) II	PB-1 + GP Rs. 2400	PB-2 + GP Rs. 4200
Sr. Asstt. Loco Pilot (NF) (80%)	PB-1 + GP Rs. 2400	PB-1 + GP Rs. 2400
Asstt. Loco Pilot (20%)	PB-1 + GP Rs. 1900	PB-1 + GP Rs. 2400

Paste a
photograph
duly attested

PROFORMA for AEE/AXEE/ADEE 30% DPQ

1	Name	
2	Father's Name	
3	Present Designation/Station/ Unit	
4	Community (UR/SC/ST)	
5	Lien holding Railway	
6	Date of Birth	
7	Date of appointment	
8	Designation in which initially appointed and scale (Rs.)	
9	PF NO:	
10	Present scale (Vth PC) / Grade Pay (VIth PC) / Pay Level (7 th PC)	
11	Date of Regular Promotion or appointment in scale Rs. 5000-8000 (5 th PC), PB-2 Rs. 9300-34800, with GP Rs. 4200/- (6 th PC)/ Pay Level 6 of (7 th PC)	
12	Date of Regular Promotion or appointment in scale Rs. 6500-10500 (5 th PC), PB-2 Rs. 9300-34800, with GP Rs. 4600/- (6 th PC)/ Pay Level 7 of (7 th PC)	
13	Length of non-fortuitous service in scale Rs. 5000-8000 (5 th PC), PB-2 Rs. 9300-34800, with GP Rs. 4200/- (6 th PC)/ Pay Level 6 of (7 th PC) as on 26/04/2022 or in scale Rs.6500-10500/- (5 th PC), PB-2 Rs.9300-34800 + GP Rs. 4600/- (6 th PC)/ Pay Level-7 of (7 th PC) as on 26/04/2022	Year.....Month.....Days.....
14	Any DAR case is pending or otherwise	
15	Mobile No.:	

Signature of the candidates

Signature of the immediate supervisor forwarding application Office seal & Date:

Forwarded to controlling officer

Signature of Controlling Officer with seal

Forwarded to Headquarter

Forwarded to Dy.CPO(GAZ)/SECR/BSP. The particulars given by the employee against column No.1 to 15 have been scrutinized and found correct as per the service record and the above named employee is eligible/ not eligible to appear for the selection for the post of AEE/AXEE/ADEE (Gr.B) against 30% quota in Electrical Department and it is certified that no Adhoc or fortuitous service has been taken in to account for computing the eligibility as on **26/04/2022**. In case any variation in the service particulars this office shall be held responsible.

Signature and name with official stamp of
Controlling Officer i.e. Personnel Officer
of concerned Divn./ Unit

**Syllabus for professional papers (Revised) for 30% LDCE for promotion to Group B post of
AEE in Electrical Engineering Department. (Amalgamated form of earlier syllabus
prescribed vide, ESTT. SRL. NO. 21/2014)**

1.0	General-
1.1	Net work analysis, Star/Delta, transformation Symmetrical Component, transients, Basics of Control Systems.
1.2	Analog and Digital Electronics and Circuits: Semiconductor device physics, PN junctions and transistors, circuit models and parameters, FET, Zener, tunnel, Schottky, photo diodes and their applications, rectifier circuits, voltage regulators and multipliers, switching behavior of diodes and transistors. Small signal amplifiers, biasing circuits, frequency response and improvement, multi-stage amplifiers and feed-back amplifiers, D.C. amplifiers, Oscillators, Large signal amplifiers, coupling methods, push pull amplifiers, operational amplifiers and wave shaping circuits. Multi-vibrators and flip-flops and their applications. Digital logic gate families, universal gate combinational circuits for arithmetic and logic operation, sequential logic circuits. Counters, registers, RAM and ROMs.
1.3	Micro-processors: Micro-processor architecture Instruction set and simple assembly language programming. Interfacing for memory and I/O. Applications of Micro-processors in power system.
1.4	Power Electronics: Power semi-conductor devices. Thyristor, Power transistor (IGBT), GTOs, and MOSFETs. Characteristic and operation. AC to DC Converters: 1-phase and 3-phase DC to DC Converters: AC regulators. Thyristor controlled reactors, switched capacitor networks. Inverters: Single-phase and 3-phase. Pulse width modulation. Sinusoidal modulation with uniform sampling. Switched mode power supplies.
1.5	Communication Systems: Types of modulation: AM, FM and PM. Demodulators. Noise and bandwidth considerations. Digital communication systems. Pulse code modulation and demodulation. Elements of sound and vision broadcasting. Carrier communication. Frequency division and time division multiplexing, Telemetry system in power engineering. Fibre optic cable communication system.
1.6	Indian Elect. Acts & Rules; Application of these to Railway working, checks to be carried out before commissioning Elect. Assets, functions and duties of Electrical Inspectors (EIG), Electricity Act 2003. Energy Conservation Act 2007, ECB Code, role of Lift Inspector, Lift & Escalators rules.
2.0	Electrical Engineering Materials-
	Band Theory, Conductors, Semiconductors and Insulators, Superconductivity. Insulators for electrical and electronic applications. Magnetic materials. Ferro and ferri magnetism. Ceramics: Properties and applications. Hall effect and its applications. Special semi-conductors. Insulating material classification/Thermal affect, Solar PV modules.
3.0	Theory and performance of Electrical Machines & equipment-

3.1	Basic concepts in rotating machines. EMF, torque, basic machine types. Construction and operation, leakage, losses and efficiency.
3.2	Direct current machines : Generation of EMF, work, power, torque equation, armature winding, armature, reaction, theory of commutation, Inter-poles & compensating windings, characteristics of shunts, series and compound generators, parallel running and load sharing of generators. Construction, Excitation methods. Circuit models characteristics and performance analysis. Generators and motors. Starting and speed control. Testing. Losses and efficiency.
3.3	Synchronous Machines. Construction. Circuit model. Operating characteristics and performance analysis. Synchronous reactance. Efficiency. Voltage regulation. Salient-pole machine. Parallel operation. Hunting Short circuit transients.
3.4	Induction Machines, Construction. Principle of operation. Rotating fields, Characteristics, and performance analysis. Determination of circuit model. Circle diagram, Starting, and speed control, Fractional KW motors. Single-phase synchronous and induction motors, 3 phase Asynchronous motors and induction motors for traction application.
3.5	Transformers: construction and testing. Equivalent circuits. Losses and efficiency. Regulation. Auto-transformer. 3-phase transformer. Parallel operation. Methods of cooling, Tap changing, parallel operation, polarity and phase sequence testing, protection Instruments, PTs & CTs, etc. Scott connection transformer.
4.0	Generation, Transmission & Utilisation-
4.1	Sources of energy, heat value of fuel, steam power station. Hydro Elect. Station, Nuclear power station. Pumped storage plants. Economics and operating factors.
4.2	Power transmission lines. Modeling and performance characteristics. Voltage control. Load flow studies. Optical power system operation. Load frequency control. Symmetrical short circuit analysis. Z-bus formulation. Symmetrical components. Per Unit representation. Fault analysis. Transient and steady-state stability of power systems. Equal area criterion. Power system Transients. Power System Protection Circuit breakers. Relays. HVDC transmission.
4.3	Illumination standards of light, polar curve, Reflection and absorption, lighting calculations including design & economical layout of service building, workshop & yards. Various sources of light-fluorescent tubes etc.
4.4	Electric traction : Advantages & disadvantages, speed time curve-traction motor, starting & speed control of DC series motors, power, consumptions, regenerative braking, advantages and disadvantages of AC traction over DC traction, Tractive effort, Breaking Effort.
4.5	Group & individual drive. Choice of drive & motors for various usages.
5.0	Measurements & instrumentation-
5.1	Units and Standards. Error analysis Measurement of resistance (high & low), potentiometer, wheat stone & Kelvin bridge, meggers for insulation resistance & earth resistance.
5.2	Voltmeters, ammeter, power factor meter, single phase watt meter, measurements of

	three phase power recording instruments, maximum demand meter. Watt hour meter, shunt, CT, PT.
5.3	Check meter
5.4	Transducers and their applications to the measurement of non-electrical quantities like temperature, pressure, flow-rate displacement, acceleration, noise level, etc. Data acquisition systems. A/D and D/A converters.
6.0	Mechanical Engineering Refrigeration etc:-
6.1	Various types of drives, belt, tooth gearing, rope and chain drive and Helical gears. Different types of bearings, ball, roller etc.
6.2	Heat pump cycle, vapor compression, estimation of cooling and heating levels and plant capacities, calculation of psychometric charts, condensers cooling and dehumidification, refrigerant and their properties.
7.0	Logical Reasoning-
	The test is given to the candidates to judge their power of reasoning spread in verbal and non verbal areas. The candidates should be able to think logically so that they perceive the data accurately, understand the relationships correctly, figure out the missing number of words, and to apply rules to new and different contexts. These indicators are measured through performance on such tasks as detecting missing links, following directions, classifying words, establishing sequences, and completing analogies.
7.1	Chart logic A chart or a table is given that is partially filled in and asked to complete it in accordance with the information given either in the chart/table or in the question.
7.2	Pattern perception: Here a certain pattern is given and generally a quarter is left blank. The candidate is required to identify the correct quarter from the given four alternatives.
7.3	Figure matrix: In this more than one set of figures is given in the form of a matrix all of them following the same rule. The candidate is required to follow the rule and identify the missing figure.
7.4	Rule detection: Here a particular rule is given and it is required to select from the given sets of figures a set of figures which obeys the rule and forms the correct series.

1.0	General Services-
1.1	General power supply arrangements, air conditioning etc.
1.2	Power Supply : HT & LT sources, power supply network, substation layout, overhead & underground distribution, maintenance & operation of transformers, switch gears, protective devices & distribution lines.
1.3	Construction, erection & commissioning of new sub station distribution lines, line calculations etc.
1.4	House wiring metering & safety precautions.

1.5	Tariff & agreements, Relative merits of obtaining HT & LT supply, steps to reduce maximum demand, measurement of power, power factor, measuring demand etc.
1.6	Water supply & requirement of water planning of water supply system, sources of water pipe line frictional & other losses, discharge calculations.
1.7	Reciprocating centrifugal & turbine pumps, relative merit, choice of VS & HS pumps, characteristic curve of pumps, efficiency Drives, Elect. Connections & protections. Cavitations & priming of pumps, measurement of output with V-Notch & nozzle, necessity of multi stage pumping, storage capacity and purification of water.
1.8	Preventive maintenance, special failure of pumps & motors, periodical overhaul.
1.9	Air-conditions and Refrigeration :
	Central air-conditioning plant & package type system, refrigeration cycle, air changes, planning for capacity and drives for refrigeration plants, refrigerants and ducting.
1.10	Specification, design & testing of water coolers, central as well as package plants. Requirements of water coolers, window coolers & refrigerators.
1.11	Standby arrangement: DG sets, both petrol & diesel as also diesel pumps for water supply arrangements. Operation maintenance and overhauling.
1.12	Illumination, yard lighting, street lighting, & town supply net work. Drives for work shop machinery.
1.13	Earthing & Bonding.
1.14	Commissioning & maintenance aspect of conventional & maintenance free earthing arrangement for general service application.
1.15	Maintenance of various equipment of sub-station, Energy Management, Important instructions issued by Railway Board and RDSO.
1.16	Energy Consumption, Renewable Energy, Solar, Wind and biomass.
2.0	Traction Distribution-
2.1	Systems of electrification in use and advantage and disadvantages of the different systems with emphasis on 2x25 KV system.
2.2	Feasibility studies and justifications for track electrifications, preliminary planning and design, procedure followed in taking up electrification scheme, working drawing for execution of OHE wiring plans and OHE layout plans.
2.3	Planning of layout of overhead equipments, Techno economic survey for electrification of new lines, foot by foot survey, prepegging plans, precautions to be taken while wiring new lines, foundation & their types & use of wiring trains, final checking safety checks & certification, energizing of new lines, principles of preparation of lay out plans, provision of return conductors.
2.4	Overhead equipments – Types of overhead equipments, regulated and unregulated systems, stitches OHE, speed potential of various types of OHE, Centenary, contact wire, Dropper & Jumpers. Overlaps, clearances, Mast & portals, schedules of Dimension etc.

2.5	Maintenance problems with OHE, Foot Patrolling, current collection, use of Tower wagons, ladders & ladder trolleys, seasonal & cycle checks, maintenance Schedule, Insulator cleaning, straightening of out of plumb masts, earthing and bonds, return conductors, Preventive maintenance Tools, Types of Blocks & Procedure.
2.6	Breakdowns, TRD works during breakdown and accidents, restoration procedure both temporary and permanent.
2.7	Overhaul schedule & anti-theft measures.
2.8	Organization & working of maintenance depots, repair workshops, training of staff safety measurements and precautions.
2.9	Power supply installation: Power supply arrangements, traction sub stations, feeding stations, SSP & SPs, 132 KV transmission lines, Railway owned sub stations, transformer maintenance, circuit breakers, current and potential transformers, protective relays, auxiliary transformers, interrupters and isolators.
2.10	Liaison with power supply authorities, monthly meter reading, control over maximum demand, emergency power supply arrangements. Automated Meter Reading.
2.11	Maintenance of switching stations.
2.12	Remote control system, remote control equipment for AC substations and its working. Operation and maintenance of remote control, Specialized equipments for remote work.
2.13	Remote control centre, traction power control organization, permit to work, emergency arrangements, coordination with operating and other departments. Liaison with supply authorities, emergency phones, safety precautions for electrified section.
2.14	Miscellaneous : Traction, stores and their accountal, regulation for electrical crossing of railway tracks.
2.15	Important instructions issued by Railway Board, RDSO's SMI/MS, TCs and related Investigation Reports.
3.0	Train lighting and conditioned coaches.
3.1	Designs, construction, principles of working schematic circuits diagrams of train lighting equipments used in train lighting system.
3.2	Coach wiring, under frame wiring, schedule of rewiring, couplers, lamp resistance, junction boxes and fuses, Generation to non-generation ratio, lights, fans and water raising apparatus.
3.3	Self generating coaches, End on-Generation, Head on Generation, power cars, electrical and mechanical components, layout, operation and maintenance procedures for slip coaches.
3.4	Train lighting batteries their maintenance, defects analysis of causes of failures and remedial measures. Simplified system of train lighting use of alternators, anti theft measures.
3.5	Fires in trains, preventive measures and precautions.
3.6	Periodic over haul and heavy repairs to train lighting equipment

3.7	Broad outlines of types of equipments used in 110 V and 415 Volt air conditioned coaches, scheme of refrigerated vans. Drives and their problems, maintenance and operational problems Refrigeration, compressors their types in service and their problems, gear boxes, their maintenance and alignment.
3.8	Maintenance schedule for AC coaches, partial AC coaches, AC I, II/III. Coaches, Sleeper coaches. Running repairs.
3.9	Coordination with Mechanical, Operating and Security Department
3.10	Important instructions issued by Railway Board, RDSO's SMI, TCs and related investigations reports.
4.0	Electric Locos-
4.1	Description of locomotives in service, principles of operation and characteristics of different types of locos used in electric traction on the Indian Railways.
4.2	Power, Auxiliary and control circuits: Their equipment, functioning, maintenance, /overhauling schedules.
4.3	Various types of bogies and bogie suspension and their components, power transmission from traction motor to axles, traction motor mounting arrangement i.e. jacqueman drive, Quill drive, WN coupler: their equipment, functioning, maintenance/overhauling schedules.
4.4	Air, vacuum and Dual Break System, Air compressors, regenerative and rheostatic breaking, their equipment, functioning, maintenance/overhauling schedules.
4.5	Function of electric loco sheds and electric loco workshops.
4.6	Schedule inspection of locos i.e. IA, IB, IC, AOH, IOH and POH.
4.7	Records and registers maintained in loco shed, planning and progress organization, statistical data, rolling stock organization in sheds and shops, fire prevention, safety checks and history cards.
4.8	Important instructions issued by Railway Board, RDSO's SMI/MS/TCs and related investigation reports, AC Traction Manual.
5.0	EMU/MEMU/Metros
5.1	Utility of EMU trains for urban and suburban services vis-à-vis locomotives, various types of EMUs stock – AC, DC and AC-DC, their salient features, rake formation.
5.2	Power circuits, auxiliary, control circuit, break systems, bogies and other mechanical components, their equipment, functioning, maintenance/overhauling schedules.
5.3	Inspection schedules of EMUs/MEMU/Metros, troubleshooting sequence.
5.4	Safety precautions and fire prevention checks.
5.5	Maintenance and overhaul organization and liaison with other department.
6.0	Electric loco and EMU operation-

6.1	Operation of electric locos with single unit and multiple unit and with rheostaic and regenerative breaking.
6.2	Safety features to be followed in the operation of electric locos and EMUs
6.3	Failures of electric locos and EMUs, their cause, investigation and remedial measures for avoiding failures.
6.4	Inter-relation between electric mechanical and operating department in functioning of electric locos and EMUs.
6.5	Function of traction loco control organization.
6.6	Preparation of engine links and driver links – power plan.
6.7	Compilation of operating statics for electric locos and EMUs operation.
6.8	Outstation organization for maintenance of electric loco and EMU.
6.9	Working rules for preparation/operation of elect. Rolling stock.
6.10	Recruitment and training of running staff – conversion training etc.
6.11	Accidents and re-railing technique of locos and EMUs.
7.0	Stores Matters-
7.1	Procedure relating to procurement of stock items, non-stock items, distribution and accountal of stores.
7.2	Receipt and custody of stores
7.3	Sale of surplus stores.
7.4	Inventory control.
7.5	Schedule of Powers
8.0	Engineering Matters-
8.1	Estimates
8.2	Execution of Work
8.3	Contracts for work
8.4	Procedure for traffic and engineering surveys
9.	Disaster Management – Role of Electrical Officer:

<u>ESTABLISHMENT RULES & PROCEDURES:</u>	
1.	Broad outlines for recruitment, training, promotion by selections and suitability tests and Trade tests etc. of staff in various categories on the Railways.

2.	Rules for issue of Passes and PTOs to Railway staff.
3.	Discipline and Appeal Rules in force to Railways.
4.	Delegation of powers in respect of Establishment matters.
5.	Broad outline of payment of wages Act, Minimum Wages, Act, Workman's Compensation A act Factory Act, Hours of Employment Rules and Apprentice's Act as applicant to the Railway working.
6.	Welfare Scheme on the Railways.
7.	Broad outlines of Trade Unions- Permanent Negotiation Machinery-Staff Councils and General Dealings with the unions.
8.	Conditions of Services of Railway Service Conduct Rules.
	<u>ACCOUNTS & FINANCE RULES :</u>
1.	Parliamentary control over Railway Finance- Public accountability cannons of Financial property.
2.	Financial planning & Budgeting- Budgetary and Financial Review-Appropriation Accounts.
3.	Rules of allocation- Classification of expenditure- control over expenditure Responsibility accounting- Performance Budgeting-Exchequer Control- Financial Rules of working.
4.	Works Programme- Financial Justification of works – Surveys preparations of Estimates- Capital Budget–Control over capital Expenditure- Productivity test.
5.	Financial control over Stores expenditure- Purchase and Stores keeping procedure- Inventory control and A,B,C, analysis.
6.	Financial and cost control in Railway Workshops.
7.	Rules and procedure relating to Tenders and Contracts for execution of works and procurement of stores.
8.	Procedure for processing and finalizing the Audit inspections and Draft Paras.
9.	Delegation of Powers.
10.	Passes & PTOs and embezzlements.
11.	Knowledge of Official Language Rules.
<u>N.B.</u>	1. Regarding Questions on General knowledge
	The question will be based to test the knowledge of candidates, which they would acquire by general observation/reading without a specific study or detailed knowledge of text books. The paper will contain questions on topics of national importance, achievements of Railways questions which tests the awareness of candidates to developments which are taking place.
	2. Ten (10%) percent of the total marks prescribed for written test should be on official language policy and rules will be included in the question paper on General Knowledge (i.e Paper –I). However, this question should not be made compulsory.