SOUTH CENTRAL RAILWAY

Office of the
Divisional. Railway Manager,
Personnel Branch,
4th Floor, Sanchalan Bhavan,
Secunderabad - 500 071.

No.SCR/P-SC/210(a)/EL(TRS)/JE/PRQ Date 13.12.2023

JE/TRS (PRQ) Notification

Sub: Formation of panel for filling up of the post of Junior Engineer/TRS at ELS/KZJ with Level-6 of 7th CPC Pay Matrix, against **25% Promotional** quota of Electrical (TRS) Department on Secunderabad Division – Reg.

Ref: Sr.DEE/ELS/KZJ's letter no. C/E.150/ELS/KZJ/E-8 dated : 04.12.2023.

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1.0 It is proposed to conduct a selection for formation of panel for promotion to the post of Junior Engineer/TRS at ELS/KZJ withLevel-6 of 7th CPC Pay Matrix against 25% Promotional quota of Electrical (TRS) Department on Secunderabad Division. The details of vacancies are as under:

Category	Quota	Level (in 7th CPC)	UR	SC	ST	Total
JE/TRS	25% PR Quota	Level-6	01	---	---	01

2.0 Conditions of eligibility:

2.1 Three times of senior most Sr.Tech of combined seniority (Elect. & Mech. wing)to the number of vacancies will be called for selection in terms of Para-215(e)of IREM Vol-I.

2.2 The following employees working in the immediate lower grade i.e. Sr.Tech/ELS/KZJ are called for selection in the order of seniority and on the basis of willingness communicated vide Sr.DEE/ELS/KZJ's letter under reference.

S.No	PF No.	Name (S/Sri/Smt)	Comm-unity	Present Design./ Station
01	24201140681	B SAMPATH KUMAR	UR	Sr.Tech/ELS/KZJ
02	24211603860	D.RAJKUMAR	UR	Sr.Tech/ELS/KZJ
03	24211600779	J.MOTILAL	ST	Sr Tech/ELS/KZJ

2.3 The list of above employees is final. If one or more employees mentioned above give unwillingness for selection on a subsequent date, additional persons will NOT be called to compensate for him/them in terms of Note-2 of Para-215(e)of IREM Vol-I.

2.4 The above employees may be notified about the notification and clear acknowledgement may be obtained. In case of any employees, who are on leave/sick list/on line, copy of notification may be sent to their home address.

3.0 Pre-selection training:

3.1 Since, the vacancy is not reserved for the SC/ST employees they are not eligible for the pre-selection training.

4.0 Syllabus:

4.1 Syllabus for the written test is enclosed as Annexure 'A'.

4.2 There shall be questions on Official Language policy & Rules upto 10% of marks. However, it is not mandatory to attend the same.

5.0 **Sample Question Bank:**

5.1 Sample Question Bank is available on official website – www.scr.indianrailways.gov.in. the same may be downloaded.

5.2 Sample Question bank is only indicative in nature but not exhaustive. The examinees are advised to update their knowledge keeping in accordance with the change of technology and job requirement with latest Rules/circulars/policies.

6.0 **Date & Venue of written examination:**

6.1 The date of written examination and venue will be informed in a short notice after completion of the pre-selection training. Hence, employees are advised to be in readiness for written examination.

6.2 Supplementary written test will be conducted if necessary, in respect of staff who could not attend to the scheduled written examination for the reasons as envisaged in Para-223 of IREM Vol-I.

7.0 **Mode of selection:**

7.1 The post of JE/TRS being a safety one, there will be no relaxation in qualifying marks, for employees belonging to SC/ST community. They have to secure minimum 60% of marks in written test & 60% in aggregate on par with UR employees (Para 10.1.1 of S.C.No.320/1999).

7.2 The selection consists of Written Examination, Perusal of Record of service and Medical Examination.

7.3 **Professional Ability** will be adjudged through written examination only. The employees must secure a minimum 60% marks in professional ability and 60% marks of the aggregate for being placed on the panel.

7.4 **Written Examination** will be objective type multiple choice question paper consisting of 110 questions (including 10 questions on Official Language Rules), of which employees are required to answer any 100 questions.

7.5 If the employee attempts more than 100 questions, the first 100 attempted questions will ONLY be evaluated. The questions attempted beyond first 100 questions will NOT be evaluated and ignored.

7.6 To ensure authenticity of the answers, **Cutting, over writing, erasing or alteration** of any type in the answer will NOT be accepted. Zero marks will be given for answers having correction or overwriting or alteration. The employees are strictly advised to note that such type of questions are treated as attempted questions i.e. they will be included in the first 100 attempted questions.

7.7 **No negative Marks:** There shall be NO negative marking for incorrect answers as selection is against promotional quota (PCPO /SC's SC No.159/2019).

7.8 The duration of examination will be 120 minutes.

7.9 Further provisions of PCPO/SC's SC No.212/2018 will be applicable for the said written examination.

7.10 **Medical Examination:** Employees qualified in written test must be fit in A-III (Aye-Three) medical classification. In the event of not meeting the requisite medical classification, their names will be dropped.

7.11 **Eligibility for empanelment:** On being found fit in prescribed medical classification, the names of selected employees shall be arranged in the order of seniority on the basis of factors/procedure in terms of Para-219 of IREM Vol-I in respect of this selection and in terms of PCPO/SC's Lr. No. P®605/XI, dt:22.08.07.

7.12 **Training:** The empanelled employees are required to undergo training for a period of 13 weeks in terms of PCPO/SC's SC No.22/2018.

8.0 Notifying to the staff:

8.1 The controlling officer/supervisor shall give wide publicity of the notification to all the eligible staff of Electrical (TRS) Department, ELS/KZJ of SC Division and notification should be displayed at conspicuous place. It is the responsibility of controlling officer/supervisor to circulate the notification among the staff concerned.

8.2 In terms of Railway Board's Lr.No.E(NG)I-72/PM1/166, dated 26.06.1972, PCPO/SC's S.C.No.213/72, the Senior Subordinate/Supervisor concerned has to furnish a certificate that "the eligible employees were duly notified of the holding of the test and asked to submit their applications duly giving their willingness" and forward the same to Sr.DPO/O/SC. It should be the personal responsibility of the Senior Subordinate/Supervisor to complete the formality in this respect.It is further advised that any other communication received in respect of the selection should invariably be intimated to all the eligible employees. In case of non receipt of any communication the same may be obtained from the Personnel department or from the Controlling Officer. Any laxity in this regard will be viewed seriously.

8.3 **The Notification, Sample Question Bank are placed on SCR website:**
(www.scr.indianrailways.gov.in→about us→ Divisions→Secunderabad→ Personnel Question Banks→ JE/ELS/KZJ

This issues with the approval of Competent Authority.

Encl: Syllabus (Annexure-A)

13.12.23

(G.LAKSHMI SUREKHA)
APO-M&EL/SC
for Sr.DPO/SC

Copy to:

1) Sr.DEE/ELS/KZJ 2) SDGM/Vig./SC (kind attention of Dy.CVO/P/SC)
3) OS/Selection Cell 4) OS/IT Cell: for uploading in website.
5) DSs/SCRES/SCRMU/AISCSTREA/SCROBCREA/SC division.

SOUTH CENTRAL RAILWAY
SECUNDERABAD DIVISION

SYLLABUS FOR PROMOTION AS JUNIOR ENGINEER IN SCALE Rs.9300-34800+4200(GP) IN TRS ORGANISATION through 25% PRQ Quota.

PART-A

A) Basics of electricity

1) Study of Electricity,Ohms Law, Magnetism, Electromagnetic induction, Flemings R.H. Rule, L.H. Rule, Lenz's Law, self inductance, Mutual inductance, Study of AC circuits i.e., RL, RC, RLC Circuits, Series Resonance, Parallel resonance.
2) Study of power factor and the improvement methods demand and economy in installation of electrical energy.
3) Measurements of Resistance, current voltage, power study of various types of meters and equipments used, Megger, diode tester, ammeter, Voltmeter etc., uses of shunts, multipliers.

B) **DC Generators**:

Working principles of D.C. Generators, DC shunt generators, DC series generators and DC compound generators.

C) **DC Motors**:

Study of DC motors and their performance characteristics and Speed characteristics. DC series motor as traction motor and its suitability for traction applications.

D) **Transformers**:

Study of Transformers and concept of Mutual induction. Step down, Step Up transformers, Auto transformers, Current transformers and Potential Transformers. Applications of Transformers.. Their role in Electricity.

E) Induction Motors:

1) Study of 3phase induction motors and their performance characteristics. Their applications, Torque speed characteristics. VFD drives and their application to Induction Motors.
2) Study of 3 phase induction motors principle, maintenance and overhauling, study of Induction generator, working principles, study of Arno, Aux, machines of A.C. Loco

F) **Transmission and distribution networks**:

Study of transmission lines and distribution lines and under-ground cables, study of erecting the lines determination of conductor size and re-cabling of locomotives.

G) **Importance of Earthing and Earth testing procedure**:

Why earthing is to be done, PIPE earthing, Plate earthing, Maintenance free earthing, Study of Earth testing procedure, insulation test for various equipments and testing of insulators.

H) Basics of Electronics, Diodes, Transistors, Amplifiers, Oscillators, GTOs, IGBTs and their properties.

I) MCBs, Contactors, Fuses, selection of rating of MCBs, contactor, fuses based on current rating.

J) **Electrical Safety and ACTS and Rules**.

1. Electricity act and safe rules and Shock treatment, first aid and use of Fire Extinguishers.

K) ELECTRICAL TRD EQUIPMENT and Its BASIC Knowledge:

Electrical OHE and Its arrangement, Traction Substation Layout and its Equipment.

PART-B

A) Conventional Locomotives(WAG-5/7, WAM-4, WAP-4)

1. DC Series Motors as Traction Motors: Study of Characteristics, Armature Reactionand Commutation Improvements for commutation and suitability of D.C. Series Motor for traction duty. Study of Traction Motor used in A.C. Locomotives WAP4& WAG5/7 Maintenance, repairs, overhaul of Traction motors of Conventional Locomotives.
2. Study of Conventional Locomotive circuits i.e., Power circuits and control circuits, parameters of A.C. Circuits, Simple calculations, study of power supply arrangements of A.C. traction(Conventional Locomotives).
3. Study of current collection in A.C. Locomotive, study of roof equipments of A.C. Loco.

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4. Study of Transformers: principle, overhaul and maintenance of Transformers, Auto-Transformers, conditions for parallel operation of transformer, study of transformer used in A.C. Loco WAP4 & WAG5/7; Maintenance and overhauling tests to be conducted on the transformer, study of tap changer, operation method for voltage control, Testing of transformer.
5. Study of fuse protectors, switches and isolators, construction and working details of circuit breakers of A.C. Conventional Locos (DL).
6. Study of various types of contractors and relays, study of relays and contractors used in the A.C. Loco, Drum Contactors. Function of blow out coil and arc chutes.
7. Study of batteries, commissioning (initial charging) maintenance and reclamation and battery charging procedures.
8. Study rectification methods, filters, study of Silicon rectifier, smoothening reactor in the Loco study of semi-conductor devices, battery charger.
9. Safe working on the locomotive precautions to be taken, Fire preventive measures in the locomotive and study of fire fighting.
10. Study of circuit, analysis of WAP4& WAG5/7 Locomotive i.e., study of circuits, cabling Index and other drawings.
11. Study of new equipments in Loco such as MPCS, SIV, VCD and WMUCS.
12. Study of DJ control Circuit. Study of various branches and trouble shooting of various branches in DJ control circuit of Locos both with SIV fitted Locos and Arno fitted Locos.
13. Study of WAP-4& WAG5/7 Bogie, wheel arrangements, suspension arrangements and all mechanical features like elements of Vibration, Oscillation, Damping devices, Elasticity etc.
14. Study of Sander gear and Brake rigging, various types of brake systems (Cubicle brake system, Tri-plate type in ConventionalLocos (WAG-7).
15. Study of Pneumatic circuitry of WAP-4 & WAG5/7, Study of various Pneumatic Valves, braking system (E-System).
16. Study of maintenance schedules for various equipment in the Conventional Locomotive, their periodicity for schedules.
17. Different lubricants used in WAG 5/7 & WAP 4 locomotives
18. Maintenance of Records in PPO section.
19. Study of Conventional Locomotive, testing, engine fitness and troubleshooting procedure.
20. RDSO Modification and SMIs implementation and maintenance of various records of Conventional Locomotives.
21. Remaining information related to Conventional locomotives(WAP4, WAG5/7)

B) **<u>3-Phase Locomotives(WAP-7, WAG-9)</u>**

1. Study of Electronic devices i.e., IGBT and GTOs as control switches in power circuitry and auxiliary circuitry of 3phase Locomotives.
2. 3phase induction Motors as Traction Motors: Study of Characteristics, use of 3phase induction motors for traction duty. Study of Traction Motor used in A.C. Locomotives WAP7 & WAG-9 Maintenance, repairs, overhaul of Traction motors of 3Phase Locomotives (WAG-9, WAP-7).
3. Study of 3Phase Locomotive circuits i.e., Power circuits and control circuits, parameters of A.C. Circuits, Simple calculations, study of power supply arrangements of A.C. traction(3phase Locomotives). IGBT as a control device in POWER circuits and Auxiliary converter circuits. Advantages of IGBT based Locos over GTO based Locos.
4. Study of current collection in 3Phase Locomotives, study of roof equipments of A.C. Loco.
5. Study of 3phase LocomotiveTransformers, overhaul and maintenance of Transformers, conditions for parallel operation of transformer, Maintenance and overhauling tests to be conducted on the transformer, testing of transformer.
6. Study of Auxiliary converter circuits (BUR circuits) and components.Auxiliary converters (BURs)power supply and load sharing between during normal condition and during isolation of one BUR.Study of fault messages and troubleshooting based on fault messages.
7. Study of Transformer cooling circuit and function of TFP MPH & their protections.
8. Study of SR coolant circulation and function of SRMPH& their protections.

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9. Machine room layout of 3phase locomotives. Locations of various equipment in Machine room.
10. Study of various types of MCBs, contractors and relays, study of relays and contractors used in the 3phase Locomotives.
11. Study of batteries in 3phase locomotives, commissioning (initial charging), maintenance and reclamation and battery charging procedures.
12. Safe working on the 3phase locomotive; precautions to be taken, Fire preventive measures in the locomotive and study of fire fighting.
13. Study of circuits, analysis of faults in WAG-9 Locomotives i.e., study of circuits, cabling Index and other drawings.
14. Protective functions in three phase locomotive(ABB document 3EHP 541526), working of VCD, Failure mode operation, Inching mode operation, Constant speed control, Traction Interlock, SR Interlock and Indication of faults using BPFA & LSFL
15. Study of WAG-9/9H Bogie, wheel arrangements, suspension arrangements and all mechanical features like elements of Vibration, Oscillation, Damping devices, Elasticity i.e., Springs and dampers etc.
16. Study of Sander gear and Brake rigging, various types of brake systems in 3phase Loco. Differences between TBU/PBU type brake rigging and conventional Brake rigging.
17. Different lubricants used in WAP 7/ WAG9 locomotives
18. Study of Pneumatic circuitry of WAG-9, Study of various Pneumatic Valves, braking systems. Study of E70 based and CCB based Brake systems.
19. Study of maintenance schedules for various equipment in the 3phase Locomotive, its periodicity. Important checks to be carried out during schedules.
20. Study of 3phase Locomotives, testing, engine fitness and troubleshooting procedure.
21. RDSO Modification and SMIs implementation and maintenance of various records for 3phase Locomotives.
22. Study of new equipments in Loco such as CVVRS, Vacuum Toilet, VCD and DPWCS.

PART -C

1. Railway service conduct rules, Pass rules, D&A rules, Hours of employment regulations, payment of wages act, WC act.
2. Procurement of Stores- stocked items and non -stocked items, imprest stores, disposal of unserviceable stores, stock verification and accountal correspondence.
3. Rules and regulations about Official Language i.e., Hindi as Official Language. Knowledge on Hindi language.

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