दक्षिण मद्य रेलवे **SOUTH CENTRAL RAILWAY**
वरिष्ट मंडल विद्युत इंजीनियर का कार्यालय
Sr. Divisional Electrical Engineer's Office
विद्युत लोको शेड Electric Loco Shed
काजीपेट KAZIPET – 506 003
फोन/फैक्स सं **Phone/FAX No. 0870-2549922**
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No.C/E.150/ELS/KZJ/E-8 Dt:30.03.2019

Sr.DPO/SC

Sub:-Syllabus for promotion as Tech-III in scale Rs 5200-20200 +1900 (GP) in TRS Orginisation through 25% LDCE Quota – reg.

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The syllabus for promotion as Tech-III in scale Rs 5200-20200 + 1900 (GP) in TRS Organisation through 25% LDCE Quota is enclosed herewith for information .

Encl: As above

Sr.DEE/ELS/KZJ 30/03/19

SOUTH CENTRAL RAILWAY
SECUNDERABAD DIVISION

SYLLABUS FOR PROMOTION as Tech-III IN SCALE Rs.5200-20200+4200(GP) IN TRS ORGANISATION through 25% LDCE 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. Study of power factor and the improvement methods demand and economy in installation of electrical energy.
2) 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) **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.

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

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

D) SIMPLE ARTHIMATIC Calculations

E) Aptitude for the Trade applied, Knowledge of elementary, Principles of the Trade and Tools used in Trade.

PART-B

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

1. DC Series Motors as Traction Motors: Study of Characteristics, Armature Reaction and 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.
4. Study of Transformer principle, overhaul and maintenance of Transformers, Auto-Transformers, conditions for parallel operation of transformer, study of transformer used in A.C. Loco WAP4/5 & 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.

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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 WAP-4 & WAG5/7 Bogie, wheel arrangements, suspension arrangements and all mechanical features like elements of Vibration, Oscillation, Damping devices, Elasticity etc.
12. Study of Sander gear and Brake rigging, various types of brake systems in Conventional Loco (WAG-7).
13. Study of Pneumatic circuitry of WAP-4 & WAG5/7, Study of various Pneumatic Valves, braking system (E-System).
14. Study of maintenance schedules for various equipment in the Conventional Locomotive, its periodicity.
15. Different lubricants used in WAG 5/7 & WAP 4 locomotives
16. Study of Conventional Locomotive, testing, engine fitness and troubleshooting procedure.
17. Maintenance of records in PPO
18. Study of new equipments in Loco such as MPCS, SIV, VCD and WMUCS.
19. 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.

B) **3-Phase Locomotives (WAP-7, WAG-9)**

1. 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).
2. 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).
3. Study of current collection in 3Phase Locomotives, study of roof equipments of A.C. Loco.
4. Study of 3phase Locomotive Transformers, overhaul and maintenance of Transformers, Auto- Transformers, conditions for parallel operation of transformer, Maintenance and overhauling tests to be conducted on the transformer, testing of transformer.
5. Study of Auxiliary converter circuits and components and Auxiliary power supply and load sharing between BURs during normal condition and during isolation of one BUR.
6. Study of Transformer cooling circuit and function of TFP MPH.
7. Study of SR coolant circulation and function of SRMPH.
8. Machine room layout of 3phase locomotives. Locations of various equipment in Machine room.
9. Study of various types of contractors and relays, study of relays and contractors used in the 3phase Locomotives.

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10. Study of batteries in 3phase locomotives, commissioning (initial charging), maintenance and reclamation and battery charging procedures.
11. Safe working on the 3phase locomotive; precautions to be taken, Fire preventive measures in the locomotive and study of fire fighting.
12. Study of circuit, analysis of WAG-9 Locomotives i.e., study of circuits, cabling Index and other drawings.
13. 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
14. Study of WAG-9 Bogie, wheel arrangements, suspension arrangements and all mechanical features like elements of Vibration, Oscillation, Damping devices, Elasticity i.e., Springs and dampers etc.
15. Study of Sander gear and Brake rigging, various types of brake systems in 3phase Loco.
16. Different lubricants used in WAP 7/ WAG9/WAG9H Locomotives
17. Study of Pneumatic circuitry of WAG-9, Study of various Pneumatic Valves, braking system.
18. Study of maintenance schedules for various equipments in the 3phase Locomotive, its periodicity.
19. Study of 3phase Locomotives, testing, engine fitness and troubleshooting procedure.
20. RDSO Modification and SMIs implementation and maintenance of various records for 3phase Locomotives.
21. Study of Electronic devices i.e., IGBT and GTOs as control switches in power circuitry and auxiliary circuitry of 3phase Locomotives.
22. Study of new equipments in Loco such as CVVRS, Vacuum Toilet, VCD and DPWCS.

PART -C

1. Rules and regulations about Official Language i.e., Hindi as Official Language.

Sr. DEE/ELS/KZJ.

Annexure-'B'

Application for Selection to the Post of Technician Gr.III/ELS/KZJ((unified wing) Electrical TRS department of SC Division /in Level-2/GP1900 against 25% LDCE quota(Qualified Staff Quota)

Affix recent photograph attested by their Controlling Supervisor

1 Name of the Employee:

2 P.F.A/c No:

3 Designation/Station:

4 Date of Birth:

(In Christian era)

5 Age as on : _____ years_____ months_____ days

6 Community: UR/ OBC/ SC/ ST
(Write the relevant community in Bold letters in the box)

7 Date of initial Appointment/Station/Dept./Divn./Rly

a) As Helper/ELS/KZJ(TRS):

b) Date of Regularization as Helper:

c) As Substitute Helper:

d) Date of Regularization of Substitute service:

8 Date of joining from other Division/Dept etc, :

9 Total length of service in Helper: _____ years _____ months _____ days

10 Educational Qualifications:

(Copies of certificates to be enclosed)

11 Awards conferred during the last three years(Railway Week):

a) Divisional Level(DRM level):

b) Headquarters level/PHOD/HOD:

c) GM/Railway Board's level:

12 Penalties imposed during last three years:

a) Minor:

b) Major:

13 Any other relevant information:

14 Contact No:

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Declaration: I hereby declare that the particulars furnished are true, complete and correct to the best of my knowledge and belief. I understand that, if at any stage it is found that the information furnished is false or incorrect or I do not satisfy/fulfill the eligibility criteria, my candidature/appointment on promotion is liable to be cancelled besides disciplinary action as per Rules. I have read the contents of the notification and agree to abide by the Rules, regulations and procedure prescribed for promotion to the post of Technician Gr.III/ELS/KZJ of Electrical TRS department of SC division.

Date: Signature of the Employee:

Station: Name:

Designation:

(For use of the Controlling Supervisor of the employee)

Lr.No. Date:

It is certified that the particulars furnished by the employee are verified with the records available in this office and found to be correct. He fulfills the eligibility criteria as stipulated in the notification.

The application is forwarded to Sr.DEE/ELS/KZJ for further necessary action please.

Date: Signature of the Controlling Supervisor:

Station: Name of the Supervisor:

Seal: Designation:

(For use of the Controlling Officer of the employee)

Lr.No. Date:

Forwarded to Sr.DPO/SC for further necessary action

1 Verified and countersigned.
2 Certified that there are no DAR/SPE/Vig cases pending against the above employee.

(In case any DAR case is pending against the above employee the details may kindly be indicated)

Date: Signature of the Controlling Officer

Station: Name:

Office Seal: Designation & Stamp:

SOUTH CENTRAL RAILWAY

Office of the Divl.Railway Manager,
Personnel Branch, 4th Floor,
Sanchalan Bhavan,
Secunderabad.

No.SCR/P-SC/209/ELS/KZJ/Tech-III/LDCE Date:02.04.2019

Sr.DEE/ELS/KZJ,
All SSE/SE/JE's of ELS/KZJ

NOTIFICATION

Sub: Formation of panel for filling up the post of Technician Gr.III/ELS/KZJ(unified wing) in Level-2/GP1900 against 25% LDCE quota/Qualified Staff quota in ELS/KZJ Electrical TRS Department of Secunderabad Division – Reg

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1. It is proposed to form a panel for filling up of 21(Twenty one) vacancies of Technician Gr.III/ELS/KZJ (unified wing) in Electrical TRS department of SC Division in Level-2/GP1900 of 7th CPC Pay matrix against 25% LDCE quota/Qualified staff quota by calling applications from volunteers from amongst the serving employees i.e Helper in Level-1/GP1800,working under ELS/KZJ Electrical TRS department of SC division. possessing the educational qualifications and fulfilling the service conditions as detailed below.

The break-up of vacancies is as under:

Community	**UR**	**SC**	**ST**	**Total**
No.of Vacancies	**17**	**2**	**2**	**21**

2. Eligibility and Service conditions of staff:

2.1 All serving Helper working under ELS/KZJ staff possessing the qualifications prescribed in the Apprentice Act with two years of regular service are eligible to volunteer for the selection{Ralway Board's letter No.E(NG)I-2015/PM1/20 dated 03.05.2017(RBE No.43/2017)}.

2.2 In terms of Railway Board's Lr.No.E (NG) I/2005/PM1/52, dated 22.08.2006, CPO/SC's S.C.No.131/2006, the cut-off date for determining the eligibility of the staff should be the date of issue of notification. As such, the volunteering employees should stand fulfill the service conditions of educational qualifications and other service conditions as on the date of notification. i.e as on **02.04.2019.**

2.3 The staff who are appointed as substitutes and subsequently regularized in a Group"D" posts are required to fulfill the service condition of two years counted from the date of regularization.

Note: In respect of employees who have reported/joined on this division on Inter Railway Request transfer/Inter Divl. Request transfer on bottom seniority, the service rendered in the Helper category in the old unit will count for the purpose of qualifying service for promotion in the new seniority unit provided

(i) he/she is otherwise eligible to be considered for the selection to Group 'C' post as per extant rules; and

(ii) the category in which he/she was working in the old unit is an eligible category for the selection/post in the new unit also. [Authority CPO/SC's S.C.No.41/2006 & 117/2006]

3.0 PRE SELECTION TRAINING.

3.1 Sr DEE/ELS/KZJ shall arrange for pre-selection training to the volunteered reserved employees, for a period of **3 to 4 weeks**, which shall cover entire syllabus prescribed for examination as per Board's instructions under SC No.41/98 read with S.C.No. 245/2001.

3.2 This pre-selection training shall be imparted as far as possible in a Zonal Training or System Technical Training School.

3.3 After completion of the pre-selection coaching, a certificate is to be issued by the controlling officer to the effect that all the eligible SC/ST employees have been imparted pre-selection training for a period of 3 to 4 weeks.

3.4 In case any of reserved community employees is unwilling to undergo pre-selection training, a written refusal in this regard shall be obtained and sent to this office for record.

3.5 These instructions should be adhered to strictly in an effective manner so that the performance of the reserved employees may come up to the required standard.

4 MODE OF SELECTION AND QUALIFIYING MARKS
(Railway Board's Lr.No.E (NG) I/2000/PM1/41, dated 20-08-2003, S.C.No.144/2003)

4.1 Professional Ability: - The professional ability of the employees in the field of selection will be adjudged through written test only. The employees must secure 60% of marks in professional ability.

4.2 The post of Tech.-III/ELS/KZJ (unified wing) being a safety one, there will be no relaxation in qualifying marks, for candidates belonging to SC/ST community. They have to obtain minimum of 60% in written test & 60% in aggregate.

Factors / Headings	Max. Marks	Qualifying Marks
Professional ability	50	30
Record of Service	30	-
Total	80	48

4.3 Distribution of marks under head of Record of Service.

15 marks	On the basis of grading of APARs/Working Report of last 3 years
10 marks	On the basis of entries of Awards/Punishments in the SR
5 marks	On the basis of entries in SR for Academic/Tech. Qualifications

4.4 The final panel should be drawn up in the order of merit based on aggregate marks of 'Professional ability' and 'Record of Service'. However, the employees must secure a minimum of 60% marks in 'Professional ability' and 60% marks in aggregate, for being placed on the panel. There will be no classification of candidates as 'Outstanding'. The final panel will also be subject to their being fit in medical classification of B-1only.

5 Syllabus:

5.1 Syllabus for the written test is enclosed as Annexure 'A'. Option is available for writing in Hindi also.

5.2 Question Bank is available on railway website – www.scrindianrailway.gov.in. However, soft copy of the same is enclosed herewith.

5.3 There shall be questions in official language policy & Rules upto 10% of marks. However, it is not mandatory to attend the same.

5. Procedure for written examination:

5.1 In terms of Railway Board's Lr.No.E(NG)I/2018/PM1/4,dated 14.12.2018(RBE No.196/2018), CPO/SC's S.C.No.212/2018, the written examination consists of 100% objective and all the questions will be of multiple choice only.

5.2 There shall be negative marking of incorrect answers. 1/3rd of marks allotted for each question will be deducted for wrong answers.

5.3 Cutting, over writing, erasing or alteration of any type in the answer will not be accepted. Zero marks will be given for answer having correction or overwriting.

5.4 The written examination will be either in the mode of computer based test or pen and paper..

7. Question Bank:

7.1 In terms of Railway Board's Lr.No.E (NG) I-2006/PM1/34, dated 06.11.2006,CPO/SC's S.C.No.196/2006, updated Question banks covering the complete syllabus will be provided to the staff concerned or the same can be downloaded from the official website of www.scr.inidanrailways.gov.in.

7.2 It is further advised that there will not be any mandatory limit of questions from the question banks.

7.3 The controlling officer/supervisor has to ensure that the question bank is circulated to all the eligible staff and holding of selections will not be postponed/delayed due to non-circulation of question banks.

7.4 Question bank is only indicative in nature but not exhaustive. The examinees are advised to update their knowledge with latest Rules/circulars/policies.

7.5 The question banks so prepared should be updated regularly in accordance with the changing technology and job requirements.

8. **Date and Venue of Examination:**

8.1 **Important dates:**

Last date of submission of applications	**30-04-2019**
Date of publication of eligibility	**10-05-2019**
Tentative Commencing of Pre-selection training	**13-05-19 to 10-06-19**
Tentative Written Examination date	**14-06-19**
Note: There shall be no Supplementary Exam.	

8.2 The venue and time of examination will be intimated separately. However, it is to be advised to the volunteering staff that there will be no supplementary examination to the absentees.

8.3 The candidates may keep an update time to time from this Railway's official website i.e. www.scr.indianrailways.gov.in.

9. **Notifying to the staff:**

9.1 The controlling officer/supervisor shall give wide publicity of the notification to all the eligible staff of ELS/KZJ Electrical TRS department 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.

9.2 In terms of Railway Board's Lr.No.E(NG)I-72/PM1/166, dated 26.06.1972, CPO/SC's S.C.No.213/72, the Senior Subordinate/Supervisor concerned has to furnish a certificate that "the eligible candidates 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.

10. **How to apply:**

10.1 The employees should submit the application in the prescribed format through proper channel enclosed as Annexure ' B '

10.2 The application should be on good quality of A-4 size using one side only.

10.3 They should fill up the application form in their own writing with blue or black ball point pen only.

10.4 All relevant columns in the application should be filled completely & strike out the inapplicable columns and forwarded duly signed by the controlling supervisor/officer wherever required or otherwise same will not be considered.

10.5 Employee should paste the recent Photograph on the application which shall be attested by the concerned supervisor.

11. Training of the empanelled staff:

11.1 The empanelled staff possessing the qualification of ITI/Course Completed Act Apprenticeship in the relevant trade in the railway establishment may be subject to trade test and those possessing the same may be promoted as Technician–III/ELS/KZJ(unified wing) in Level-2/GP1900 Electrical TRS department of SC Division.

11.2 If the empanelled staff do not possess the qualification of ITI/Course completed Act Apprenticeship in the relevant trade in the Railway establishment will be imparted training for a period of six months. On completion of the training the staff will be subjected to trade test and such of them as pass the trade test will be promoted as Technician (Trade) in GP 1900/-.

11.3 The employees who fail in the trade test will be subjected to the trade test after a gap of six months and they will be promoted if they pass the trade test. Those failing in the trade test so held will be required to appear in the selection afresh as and when held. They will not, however, be required to be subjected to training again.

12. <u>Last date for submission of Applications</u> :

The willing and eligible volunteers have to submit their applications in prescribed proforma to their controlling supervisors on or before **30.04.2019** who will forward the applications in **one bunch** to the controlling officer on or before **03.05.2019**. The controlling officer has to forward all the applications in one bunch to Sr.DPO/O/SC together with DAR/SPE/Vig.clearance on the same date as they received.

Encl:

1. Syllabus (Annexure- 'A')
2. Application Proforma(Annexure- 'B')

(B.ARUN KUMAR)
DPO-I/SC
for Sr.Divl.Personnel Officer/SC

C/- Divisional Secretaries of recognized unions

for Sr.Divl.Personnel Officer/SC