दक्षिण मद्य रेलवे **SOUTH CENTRAL RAILWAY**
वरिष्ट मंडल विद्युत इंजीनियर का कार्यालय
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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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