

17640

15162

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (7) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

- 1. Attempt any FIVE :** **20**
 - (a) State any two miscellaneous equipments at control post with their functions.
 - (b) List four special features of traction transformer.
 - (c) Explain effect of speed on OHE (Any four points).
 - (d) Draw a neat labelled diagram to show Automatic Weight Tension and Temperature Compensation of OHE.
 - (e) With the help of neat diagram, explain the method to obtain unidirectional polarity in train lighting.
 - (f) What is end on generation ? State any two advantages.
 - (g) List any eight equipments used in auxiliary circuit of electric locomotive.

- 2. Attempt any TWO of the following :** **16**
 - (a) Draw a neat labelled diagram of feeding post and write any four points related to it.
 - (b) Draw a neat labelled diagram to show protective system for AC traction and give the function of each relay used in it.
 - (c) Draw and explain construction of Faireley type of pantograph collector. Also explain its working in brief.

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3. Attempt any TWO of the following : 16

- (a) List and draw any four polygonal OHE construction stating its speed suitability.
- (b) State the function of
 - (i) Neutral section
 - (ii) Section insulator
 - (iii) Un-insulated overlap
 - (iv) Insulated overlap
- (c) (i) List two major equipments at traction sub-station with their functions.
(ii) Draw a neat layout diagram of traction sub-station.

4. Attempt any TWO of the following : 16

- (a) Draw the neat labelled diagram of AC track circuit and explain the function of impedance band present in it and also give the advantage of AC track circuit.
- (b) List any two types of relays and contactors with their function used in AC locomotive.
- (c) (i) State any four ideal requirements of signalling system.
(ii) Give any four advantages of Voice frequency signals over DC signalling system.

5. Attempt any TWO of the following : 16

- (a) With the help of neat labelled diagram, explain the working of Double Battery Parallel Block System used in Train Lighting.
- (b) Draw neat labelled diagram of single-phase AC locomotive showing its various equipments of power circuit and give the function of each equipment used in power circuit.
- (c) (i) Explain the need of maintenance of electric-locomotive.
(ii) State four important features of LEM that differ it from normal electric motor.

6. Attempt any TWO of the following :**16**

- (a) Explain with necessary diagram the earth fault protection of power and auxiliary circuit.
 - (b) List any four types of electrical faults that may occur on electric-locomotive with their causes.
 - (c) With respect to LIM propelled railway traction system, state four points of
 - (i) Strengths of LIM
 - (ii) Weaknesses of LIM
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