



# 17640

16172

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) *Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.*

**Marks**

1. Attempt **any 5** of the following :

**20**

- State where interrupter is located. What is its function? And which one is the important difference between it and CB?
- Distinguish between third rail system and overhead collection system- any 4 points.
- State the necessity of signalling system.
- Explain the meaning of the terms. WAM<sub>1</sub>, WAV<sub>3</sub>, YAV<sub>1</sub>, WAG<sub>1</sub>.
- Describe different causes of defects in Locomotive any (2) and the remedial actions will you suggest for the same.
- Differentiate between LIM and ordinary IM (any 4 points).
- List various miscellaneous equipments at control post. State use of each.

2. Attempt **any 4** of the following :

**16**

- Draw a neat labelled sketch of traction substation.
- Draw a neat labelled diagram of Automatic weight tension and temp. compensation and give any 2 advantages of the same.
- Give purpose and location of
  - Uninsulated overlap
  - Insulated overlap
  - Neutral section and
  - Section insulator.
- List any 4 advantages of multiaspect colour light signals.
- Differentiate DC and AC track circuits on the basis of
  - Length of circuit
  - Application
  - Effect of stray currents
  - Maintenance
- Write any 4 points that state how a traction transformer is different from ordinary transformer.

**P.T.O.**



- 3. Attempt any 4 of the following :** **16**
- a) List any 4 characteristics of efficient maintenance of Locomotive.
  - b) With the help of a neat figure explain differential current protection of traction circuit.
  - c) List any 4 strengths of LIM propelled railway traction.
  - d) Draw a neat sketch of power circuit of 3-phase locomotive.
  - e) For a pantograph write any 2
    - i) types
    - ii) advantages
    - iii) methods of raising
    - iv) materials for collector strip
  - f) Explain use of traction transformer and its speciality.
- 4. Attempt any 4 of the following :** **16**
- a) With a neat figure, explain End-on generation.
  - b) Draw a neat sketch of earth fault protection of auxiliary circuit of electric loco. State the function of relay and isolating resistance.
  - c) Explain moving primary fixed secondary single sided LIM with the help of figure.
  - d) How to improve reliability of locomotive ?
  - e) Write any 4 equipments and their function in auxiliary circuits of electric locomotive.
  - f) Draw a neat labelled sketch of feeding post.
- 5. Attempt any 4 of the following :** **16**
- a) State effect of speed on OHE.
  - b) State what is meant by mimic diagram and what is the indication in mimic diagram of following coloured lamps.
    - 1) Green lamp
    - 2) Milky white lamp
    - 3) Red lamp
  - c) State any 4 limitations of Arno converter.
  - d) Write 4 major equipments and their function at traction substation.
  - e) Draw a neat and labelled figure of fairly type pantograph.
  - f) Write a step-by-step procedure of obtaining constant output using 3-brush generator.
- 6. Attempt any 4 of the following :** **16**
- a) List any 4 contactors and their purpose.
  - b) State any 8 causes for failure of under-frame equipments.
  - c) Draw a neat and labelled sketch of compound catenary construction and state its speed limits.
  - d) Draw a neat and labelled sketch of transformer protection.
  - e) What is encumbrance ? Write its value in normal situation.
  - f) State the advantages of remote control system in traction (any 4).
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