



17640

11718

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.

Marks

1. Any five :

(5×4=20)

- a) State any four points of differences between circuit breaker and an interrupter.
- b) State the necessity of employing MHO relay in the protection scheme for 25 kV OHE.
- c) i) List two limitations of third rail system.
ii) Draw labelled diagram of typical single catenary construction.
- d) i) List any two factors which are to be considered while designing height of contact wire.
ii) What is encumbrance ? State its value.
- e) i) Give any two advantages of remote control system.
ii) State the significance of mimic diagram.
- f) Draw the labelled diagram of power circuit of electric locomotive.
- g) List two types of defects that may occur in electric locomotive and the methods by which they can be eliminated.

2. Any two :

16

- a) In relation with control posts of traction SS, list :
 - i) Four major equipments
 - ii) Four miscellaneous equipments.State the function of each of them.
- b) Draw a neat layout of traction sub station and discuss its main features.
- c) i) List any four advantages of automatic weight tensioning and temperature compensation arrangement in OHE. **4**
ii) Give any four difference between uninsulated and insulated overlap. **4**

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**3. Any two :****16**

- a) Draw a neat labelled layout of feeding post and state the function of any four components present in it.
- b) For a faivelely type pantograph :
 - 1) Draw its neat labelled diagram. **4**
 - 2) Explain its construction and working. **4**
- c) i) List four types of construction of polygonal OHE with their scope of application.
ii) Explain why neutral section is required in ac traction system and not in dc traction system.

4. Any two :**16**

- a) i) With the help of circuit diagram, explain the working of dc track circuit. **5**
ii) Give the functions of impedance bond present in AC track circuit. **3**
- b) With the aid of neat diagram, explain the working of Double Battery Parallel Block System.
- c) i) With the help of neat diagram, explain method of obtaining unidirectional polarity in case of train lighting. **4**
ii) List four special features of train lighting dynamo. **4**

5. Any two :**16**

- a) i) List four types of electric locomotives according to type of services.
ii) State the reason for employing air blast type circuit breaker in electric locomotive.
- b) i) List two types of contactors used in electric locomotive with their scope of application.
ii) State the function of earthing switch and lap changer in electric locomotive.
- c) i) Explain the need of maintenance of electric locomotive.
ii) List four factors by which reliability of electric locomotive can be improved.

6. Any two :**16**

- a) i) List four characteristics for efficient maintenance of electric locomotive. **4**
ii) Explain with diagram the earth fault protection of power circuit. **4**
 - b) i) Explain with diagram the construction of linear electric motor. (Moving Primary, Fixed Secondary Single Sided LIM)
ii) Compare LEM with IM in four points.
 - c) In reference with linear electric motor list :
 - i) Four strengths
 - ii) Four weaknesses.
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