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11819

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) *Assume suitable data, if **necessary**.*
 - (6) *Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.*

Marks

1. Attempt any five :

20

- a) Give any four advantages of remote control system.
- b) Give the purpose and location of neutral section and section insulator.
- c) With neat sketch explain four aspect colour light signalling.
- d) State the classification of locomotive.
- e) With the help of neat diagram explain the method to obtain unidirectional polarity in train lighting.
- f) List any 8 equipments used in auxiliary circuit of electric locomotive.
- g) Explain the following 1) Encumbrances 2) Span length.

2. Attempt any two :

16

- a) Draw a neat labelled diagram of feeding post and write any four points related to it.
- b) With neat sketch explain automatic weight tension and temperature compensation.
- c) Draw and explain in brief construction of Diamond Pantograph. Write one advantage and one disadvantage of it.

3. Attempt any four :

16

- a) Explain with neat diagram trolley collector for overhead system.
- b) List any four weaknesses of LIM propelled railway traction system.
- c) List any four miscellaneous equipments at control post. State function of each.

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- d) Explain with neat diagram the working of double battery parallel block system in train lighting.
- e) Draw a neat diagram of earth fault protection of auxiliary circuit.
- f) List any four current collectors for overhead system. State application of each.

4. Attempt any two :**16**

- a) i) State any four ideal requirements of signalling system.
ii) Give any four advantages of voice frequency signalling over DC signalling system.
- b) i) State any four relays used for catenary protection. State function of each relay.
ii) Write down the circuit breaker with their rating used in traction substation. Explain any one.
- c) Draw neat labelled diagram of 1- ϕ AC locomotive showing its various equipment of power circuit and give the function of each equipment used in power circuit.

5. Attempt any four :**16**

- a) Draw neat sketch of moving secondary fixed primary single sided LIM.
- b) Draw neat labelled diagram of AC track circuit. Also give two advantages of AC track circuit.
- c) Explain the need of maintenance of electric locomotive.
- d) State four important features of LEM that differ it from normal electric motor.
- e) Give protection scheme used for 25 kV catenary protection for AC traction.
- f) List different types of signals. State application of each.

6. Attempt any two :**16**

- a) Explain with neat diagram
 - i) Sectioning and paralleling post
 - ii) Sub sectioning post.
 - b) Explain the surge protection of electric locomotive from
 - i) Direct lightning stroke
 - ii) Switching surges.
 - c) i) Explain protection of locomotive from overvoltage and undervoltage.
ii) Explain with neat sketch overload protection for power circuit of locomotive.
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