



C14-EE-602

4744

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2018**  
**DEEE—SIXTH SEMESTER EXAMINATION**  
**ELECTRIC TRACTION**

*Time* : 3 hours ]

[ *Total Marks* : 80

**PART—A**

3×10=30

**Instructions** : (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. What is electric traction?
- \* 2. State the factors which affect schedule speed.
3. Define coefficient of adhesion.
4. Classify electric traction system equipment.
5. What is suninsulated overlap?
6. Write any three important requirements of traction motors.
7. Write any three constituents of supply systems in traction sub-station.
8. What is meant by traction sub-station?
9. List any three requirements train lighting.
10. List any three requirements of railway coach air-conditioning.

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**PART—B**

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11.** Derive an expression for the maximum speed of a trapezoidal speed time curve.
- 12.** Derive an expression for tractive effort (*a*) during acceleration, (*b*) during free running and (*c*) during up gradient.
- 13.** The average speed of an electric train is 40 KMPH on a level track between two stops of 2·5 km. Determine the specific energy consumption if acceleration and retardation are 2 KMPHPS and 3·1 KMPHPS. Take the rotational inertia as 12%, track resistance as 60 Newtons/Tonne and overall efficiency 88%. Also draw the speed time curve.
- 14.** Explain Booster transformer with diagram.
- \* **15.** Explain bow collector used in electric traction with diagram.
- 16.** Draw the diagrams of single-catenary and double-catenary arrangements and label the parts.
- 17.** Describe end on generation.
- 18.** List the factors to be considered for selection of site for traction sub-station.

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