



C14-EE-602

4742

BOARD DIPLOMA EXAMINATION, (C-14)  
SEPTEMBER/OCTOBER - 2020  
DEEE—SIXTH SEMESTER EXAMINATION  
ELECTRIC TRACTION

Time : 3 hours ]

[ Total Marks : 80

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**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. State the importance of speed-time curve.
2. Define the following :
  - (a) Maximum speed
  - (b) Scheduled speed
3. List the factors affecting coefficient of adhesion.
4. List any six overhead equipments in traction system.
5. State the effect of speed on overhead equipment.
6. State the purpose of trolley wire in traction system.
7. List various constituents of supply systems in traction substations.
8. What are the importances of location and spacing of substation?

- \* 9. State the requirements of train lighting.
10. State the requirements of railway coach air-conditioning.

**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. The scheduled speed of an electric train is 42 km/hr between two stations which are 2.5 km apart. The maximum speed is 1.5 times the average speed and braking retardation is 1.2 km/hr/s. Assume trapezoidal speed-time curve. Calculate the acceleration required to run the service. Station stopping time is 30 sec. 10
12. A train weighting 120 tonnes is to be driven up an inclination of 2% at a speed of 36 km/hr. Train resistance at this speed is 2 kg/tonne. Find the current required at 1500 V DC, if efficiency of motor and gearing is 88%. If current were cut-off, how long would the train take to come to rest? 10
13. (a) List the factors that affect specific energy consumption. 3  
(b) Explain the mechanics of transfer of power from motor to driving wheel. 7
14. Explain the suitability of DC series motor for electric traction. 10
15. Explain the following polygonal overhead equipments in traction system : 5+5  
(a) Switched catenary construction  
(b) Modified 4-compound catenary
16. Explain about construction and working of faiveley pantograph with the help of neat sketch. And also write maintenance of pantograph. 8+2

- \* **17.** Describe the following constituents of supply system : 5+5  
(a) Elementary section  
(b) Feeding posts
- 18.** Explain end-on generation in traction system. 10

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