



C14-EE-602

4742

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**OCT/NOV—2018**  
**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 factors which affect the schedule speed.
2. Draw the speed-time curve and label the parts.
3. Define coefficient of adhesion.
4. Draw single catenary and label the parts.
5. Write a short note on automatic weight system.
6. State the preferred locations of insulated overlaps.
7. List the constituents of traction substation.
8. Draw a single battery system.

- \* 9. List the major equipments in a substation.
10. State the methods of obtaining unidirectional polarity.

**PART—B**

10×5=50

**Instructions** : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) The answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Derive the expression for the maximum speed of a trapezoidal speed-time curve.
12. A 500 tonne goods train is to be hauled by an electric locomotive up a gradient of 2 in 100 with an acceleration of 1.2 kmphps. Determine the adhesive weight and number of axles on locomotive if the axle load is not to exceed 21 tonnes. Take rotational inertia to be 10% for locomotive, tractive resistance is 40 N/tonne and coefficient of adhesion is 0.25.
13. Derive an expression for the specific energy consumption for a trapezoidal speed-time curve.
14. Explain the importance of neutral section with neat diagram.
15. Explain automatic weight tensioning with its advantages.
16. Explain the diamond pantograph collector with neat diagram.
- \* 17. Explain traction substation with relevant diagrams.
18. Explain the feeding and sectioning arrangements with diagram.

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