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C14–EE–**602**

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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2017

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. State any three advantages of electric traction.

2. List any three factors which affect the scheduled speed.

3. List the methods to improve coefficient of adhesion.

4. Draw double catenary and label the parts.

5. Draw the stop indicator and level crossing indicator signal boards.

6. Explain the purpose and material used for pantograph collector.

7. List any three considerations for location of traction substation.

8. State the importance of switching station in electric traction.

9. State any three requirements of train lighting.

10. List any three 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. Describe the various stages of speed-time curve with a neat diagram.   10

12. Derive an expression for the tractive effort.   10

13. An electric train has an average speed of 42 kmph on a level track between stops 1400 m apart. It is accelerated at 1·7 kmphps and is braked at 3·3 kmphps. Estimate the specific energy consumption. Assume tractive resistance as 50 N/tonne and allow 10% for rotational inertia.   10

14. Explain booster transformer with diagram.   10

15. Explain the following :   5+5

    (a) Faiveley pantograph

    (b) Bow collector

16. *(a)* Write a brief note on suitability of DC series motor for traction.

    (b) Explain about trolley inspection.   5+5

17. Explain 'end on generation' with advantages and disadvantages.   10

18. Describe the following equipments at traction substation :   5+5

    (a) Circuit breaker

    (b) Interrupter

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