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C16-EE–403

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BOARD DIPLOMA EXAMINATION, (C-16)

JANUARY/FEBRUARY—2022

DEEE - FOURTH SEMESTER EXAMINATION

ELECTRICAL UTILIZATION AND 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. Define *(a)* illumination *(b)* plane angle and *(c)* luminous efficiency.

2. Define glare and state any two reasons for glare.

3. State any sixx advantages of electric heating.

4. State any six applications of dielectric heating.

5. List any three advantages and disadvantages of CF lamps.

6. List the advantages of remote operated power device.

7. Draw a neat sketch of speed-time curve and label its parts.

8. Define *(a)* co-efficient of adhesion and *(b)* scheduled speed.

9. State the requirements of train lighting.

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

PART—B

10×5=50

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

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

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

11. State and explain laws of illumination.

12. *(a)* Define utilisation factor and state any three factors affecting it. 5

(b) Two lamps luminous intensity 150 candela and 200 candela are mounted at 10 m and 15 m respectively. The horizontal distance between the lamp posts is 30 m. Calculate the illumination in the middle of the post. 5

13. Explain direct and indirect resistance heating with neat sketch.

14. *(a)* Explain coreless type induction heating with neat sketch. 5

(b) Explain single battery system with neat sketch. 5

15. Explain the concept of energy audit and management.

16. Define tractive effort and derive the expression for tractive effort in electric traction.

17. *(a)* The average speed of an electric train on level track is 45 kmph between two stations which are 1·8 km apart. Find the maximum speed, when the acceleration and retardations are 2 kmphps, and 3 kmphps respectively, assuming trapezoidal speed time curve. 5

(b) State any five important requirements of traction motor. 5

18. *(a)* Explain feeding post with neat sketch. 5

(b) Write a short note on end-on generation. 5

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