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C-16S-EE-505

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BOARD DIPLOMA SUPPLEMENTARY EXAMINATION, (C-16S)

JUNE / JULY - 2020

DEEE - V SEMESTER EXAMINATION

ELECTRICAL DRIVES AND TRACTION

Time : 2 Hours] [Total Marks : 80

PART - A 5×6=30

Instructions : *(1) Answer any SIX questions.*
(2) Each question carries FIVE marks.
(3) Each answer should not exceed more than ONE page.

1. State any four advantages of an Electric Drive.
2. List the methods of electric braking.
3. List any six domestic applications of electric drive.
4. List the types of motors used in textile mills.
5. Write the suitable motors for the following :

   (i) Printing (ii) Cranes and (iii) Lifts
6. State the factors affecting scheduled speed.
7. Sketch the speed - time curves of urban and sub-urban services.
8. Define the coefficient of adhesion.
9. Write any three factors affecting specific energy consumption
10. State any three requirements of train lighting.

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PART - B 10×5=50

Instructions : *(1) Answer any FIVE questions.*
(2) Each question carries TEN marks.
(3) Each answer should not exceed more than TWO Pages.

11. (a) Explain the significance of using a flywheel in industrial drives. 5

    (b) State the factors governing the selection of Electric drive. 5
12. Explain the plugging method of Electric braking of DC motors with neat sketches.
13. Explain the working principle of a refrigerator along with drive.
14. Explain the working of cement mill with suitable motor.
15. A train runs at an average speed of 45 kmph between the stations situated 2.5 km apart. The train accelerates at 2 kmphps and retards at 3 kmphps. Determine the maximum speed assuming a trapezoidal speed-time curve. Calculate the distance travelled by it before the brakes are applied.
16. (a) Explain tractive effort and derive an expression for it. 5

    (b) List the factors affecting specific energy consumption. 5
17. Calculate the specific energy consumption of a 250 tonne electric train with 10% rotational inertia. The train reaches a maximum speed of 50 kmph in 25 s on a level track. The distance between the stations is 2.4 km. The acceleration and retardations are 2 kmphps and 3 kmphps respectively. Assume the track resistance as 49 newton / tonne and the efficiency of the motor is 90%.
18. Explain the different types of current collectors used in electric traction with neat sketches.

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