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C14–EE–504

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

DEEE—FIFTH SEMESTER EXAMINATION

INDUSTRIAL DRIVES

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. Classify the drives based on their operation. 3

2. Compare AC drive with DC drive. 3

3. What are the advantages of using flywheel in some industrial drives? 3

4. State any four advantages of electrical braking. 3

5. What is regenerative braking? For which motors regenerative braking can be applied? 3

6. List the disadvantages of electrical braking. 3

7. List any six domestic applications of drives. 3

8. Select the suitable motor for the following : 1+1+1=3

(a) Refrigerator

(b) Vacuum cleaner

(c) Mixy

9. List any six industrial applications of drives. 3

10. List the types of motors used in textile mills. 3

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. A motor operates continuously on the following duty cycle :

Load raising for 0–40 kW for 6 second, constant load of 120 kW for 6 second, constant load of 80 kW for 10 second and idle for 14 second

Draw the load cycle and suggest a suitable continuous rated motor. 10

12. *(a)* State the methods employed for noise reduction in drives.

(b) State four mechanical considerations in selecting a motor for a drive and state what is load cycle. 2+8=10

13. *(a)* State the merits and demerits of individual and group drive.

(b) What are the advantages of load equalization? 5+5=10

14. A 400 V, 25 h.p., 450 r.p.m., d.c. shunt motor is braked by plugging when running on full-load. Determine the braking resistance necessary if the maximum braking current is not to exceed twice the full-load current. Determine also the maximum braking torque and the braking torque when the motor is just reaching to zero speed. The efficiency of the motor is 74·6% and the armature resistance is 0 2 . 10

15. *(a)* What is dynamic braking? Explain how dynamic braking applied to d.c. series motor.

(b) Explain why plugging gives greater braking torque than dynamic braking. 5+5=10

16. *(a)* A 440 V, 40 kW, 600 r.p.m., d.c. shunt motor has a full-load efficiency of 90%. The field resistance is 220 and the armature resistance is 0 1 . Find the speed under regenerative braking.

(b) List the methods employed for electrical braking. 7+3=10

17. *(a)* Explain the working principle of refrigerator along with drive.

(b) Explain the working of belt conveyors with suitable motor. 5+5=10

18. *(a)* Explain the working of cement mill with suitable motor.

(b) Explain the working of flour mill with suitable motor. 5+5=10

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