C14–EE–504

4639

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2018
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. Define an electric drive and list the various components of it.

2. List the types of loads that occur in industrial practice based on duty.

3. Explain the need of load equalization.

4. State the different types of electrical braking systems of motors.

5. What is the plugging method of electrical braking?

6. What is the principle of magnetic braking system for electric motors?

7. Write few lines known to you about mixie.

8. Mention suitable motors for the following drives : 1×3=3

 (a) Refrigerator

 (b) Vacuum cleaner

 (c) Grinder

9. Write any six industrial applications of drives. ½×6=3

10. Write any three characteristics for the motor suitable for flour mill.

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) Write any five factors governing the selection of electric drive.

 (b) Compare between group drive and individual drive. 5+5

12. A motor has the following duty cycle :

 Load rising from 100 to 600 HP in 5 minutes. Uniform load 300 HP in 2 minutes. Regenerative braking HP returned to supply from 50 HP to zero in 1 minute. Remains idle for 1 minute and repeats the cycle. Estimate suitable HP rating for the motor and draw the load curve.

13. Explain the various types of motor enclosures.

14. Explain the rheostatic braking applied to the following motors : 5+5

 (a) DC shunt motor

 (b) DC series motor

15. What is regenerative braking? Explain regenerative braking applied to AC three-phase induction motor. 5+5

16. A 50 HP 440 V DC shunt motor is braked by plugging. Calculate the value of resistance to be placed in series with the armature circuit to limit the initial braking current to 100 A. Calculate the braking torque so obtained. Assume armature resistance 0·25 , full-load armature current 80 A and full-load speed as 750 r.p.m.

17. *(a)* Explain the working principle of air conditioner.

(b) Mention suitable motors for the following drives :

(i) Cranes

(ii) Sugar mills

(iii) Lifts and hoists

(iv) HDD (Hard-disk drive)

(v) Robot arm   5+5

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

(b) Explain the working of wood working machine with suitable motor.   5+5

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