



C14-EE-504

4639

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2017**  
**DEEE—FIFTH SEMESTER EXAMINATION**  
**INDUSTRIAL DRIVES**

Time : 3 hours ]

[ Total Marks : 80

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**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 drives.
2. Classify the drives based on their application.
3. List the types of enclosures of a motor.
4. List the types of electric braking.
5. What is regenerative braking?
6. Draw the circuit diagrams of DC series motor in plugging at the following conditions :
  - (a) Running
  - (b) Braking

- \* 7. List the properties required for a ceiling fan drive.
- 8. State the working principle of a grinder.
- 9. List the properties required for ship propulsion drive.
- 10. List any three applications of 3-phase squirrel-cage induction motor.

**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) Compare AC and DC drives.  
 (b) Explain the need of load equalization.
- 12. State different duty cycles of drives and explain with neat sketches.
- 13. A motor has following duty cycles :  
 Load rising from 150 to 400 hp in 6 minutes. Uniform load of 300 hp for 5 minutes. Regenerative braking hp returned to supply from 50 to zero in 1 minute. Remains idle for 1 minute. This cycle is repeated indefinitely. Determine a suitable size of motor and draw the load curve.
- 14. A 50 hp, 440 V, 600 r.p.m. d.c. series 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 140 A. Calculate the braking torque so obtained. Assume armature resistance as  $0.1 \Omega$ , full-load current as 100 A and series field resistance as  $0.2 \Omega$ .
- 15. Explain regenerative braking of 3-phase induction motor with a neat diagram.

- \* 16. Explain the rheostatic braking applied to d.c. shunt motor with a neat diagram.
17. List the characteristics required for drives used at different stages of textile making process and suggest suitable motors.
18. (a) Name the suitable motor for the following drives :
- (i) Domestic refrigerator
  - (ii) Vaccum cleaner
  - (iii) Mixies
  - (iv) Grinders
  - (v) Air conditioners
- (b) List the characteristics required for drives used in lifts.

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