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**Question Paper Code : R 3684**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Third Semester

Mechanical Engineering

EE 252 — ELECTRICAL MACHINES AND DRIVES

(Common to Mechatronics Engineering)

(Regulation 2001)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What type of drive to be selected for a paper mill?
2. What is meant by continuous rating of motors?
3. Draw the speed torque characteristics of DC shunt motor.
4. Which motor is selected to start P with high load?
5. What is the drawback in three point starter?
6. What is the type of starter used in slip ring induction motor?
7. When ward Leonard speed control is used?
8. What is meant by slip power recovery?
9. Name the different methods used to control the speed of a dc drive using solid state control.
10. What is the need for earthing?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the different factors influencing the choice of electrical drive. (16)

Or

- (b) (i) A 50kW motor with a heating time constant of 100 minutes has a final temperature rise of 50°C on continuous rating. Find the half an-hour rating of the motor for this temperature rise assuming that it cools down completely between each load period. The motor has maximum efficiency of 80% at full load. (10)

- (ii) Write short notes on "Group drives". (6)

12. (a) Explain the braking methods used in three phase induction motors. (16)

Or

- (b) Explain the speed torque and braking characteristics of single phase induction motor. (16)

13. (a) Explain the different types of starters used in DC shunt and series motors.

Or

- (b) Explain the different starters used in three phase induction motors.

14. (a) (i) Explain the different methods of speed control used in DC series motors. (8)

- (ii) A 250V shunt motor with armature resistance of 0.5ohm runs at 600rpm on full load and takes an armature current of 20A. If resistance of 1.5ohm is placed in the armature circuit find the speed on (1) full load torque (2) half full load torque. (8)

Or

- (b) Explain voltage, frequency and slip power control used in three phase induction motors. (16)

15. (a) Explain with neat diagram the method of speed control of dc drives using rectifiers. (16)

Or

- (b) Explain in detail about the
- (i) Power distribution schemes. (8)
  - (ii) Explain the different earthing methods with neat sketch. (8)