# T 8185

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Third Semester

Mechanical Engineering

EE 1213 — ELECTRICAL DRIVES AND CONTROLS

(Common to Production Engineering)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the electric braking of compound motors.

2. Name the solid state controllers used for the speed control of DC shunt motor and series motor.

3. DC series motor should be started only with load. Why?

4. What are the different types of starter used for 3 phase induction motor?

5. List out the various components used in electric drive systems.

6. Define Group Electric Drive and mention the advantages.

7. Write short notes about the different types of loads.

8. Mention the main factors, which decide the choice of electrical drive for a given application.

9. Why chopper based dc drives give better performance than rectifier controlled drives.

10. Compare AC drives and DC drives.

PART B — (5 × 16 = 80 marks)

11. (a) A 100 kW motor, having rated temperature rise of 60° C, has full-load efficiency of 80% and the maximum efficiency occurs at 85% full-load. It has thermal time constants of 80 minutes and 65 minutes. It is cyclically loaded, 120% of full-load for over hour and 50% of full-load for the next hour. Find the temperature rise after 3 hrs.

Or

(b) (i) Explain the different types of loading of drives.

(ii) Explain the choice of selection of the motor for different loads.

12. (a) Explain about the quadrantal diagram of speed-Torque characteristics for a motor driving a hoist load.

Or

(b) Explain about the speed-torque characteristics of a DC shunt motor and DC series motor with suitable graph and equations.

13. (a) Describe the construction and working principle of four point starter.

Or

(b) Explain the different starting methods of 3 phase induction motor with neat sketches.

14. (a) Explain with neat sketches about the DC shunt motor speed control by using single phase fully controlled bridge converter.

Or

(b) Discuss the Ward-Leonard speed control system with a neat circuit diagram. Also mention its advantages and disadvantages.

15. (a) Explain the V/f control method of AC drive with neat sketches.

Or

(b) Discuss the speed control of AC motors by using 3 phase AC voltage regulators.

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