

D 4050

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Third Semester

Mechanical Engineering

EE 1213 — ELECTRICAL DRIVES AND CONTROL

(Common to Production Engineering)

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the factors that can influence the choice of a motor to drive the load.
2. What is thermal over loading?
3. Draw the speed-torque characteristics of d.c. series motor.
4. What is dynamic braking?
5. What is the function of a starter in d.c. motor?
6. State the methods of starting of electric motors of induction type.
7. What is a chopper?
8. Give applications of Ward-Leonard system of speed control.
9. How the variable frequency is obtained at the output of the inverter?
10. What is meant by slip power recovery scheme?

PART B — (5 × 16 = 80 marks)

11. (a) Explain about various factors for the selection of motor drives.

Or

- (b) (i) Selection of drives depends on the purpose for which they are meant for. Explain this statement with suitable examples.
- (ii) Describe the selection of power rating for drive motors with regard to thermal overloading.
12. (a) (i) Draw the speed-torque characteristics of d.c. shunt and series motors and explain.
- (ii) What is meant by regenerative braking? How is it achieved in d.c. motors?

Or

- (b) Discuss briefly the various methods of electrical braking applicable to induction motors.
13. (a) Draw a neat sketch of three point starter and explain its working.

Or

- (b) What are the various methods of starting three phase squirrel cage induction motor? Explain any one method.
14. (a) Describe Ward-Leonard method of speed control with the help of a connection diagram. Explain its operation at starting, stopping and reversing.

Or

- (b) Explain the following control modes of a d.c. chopper drive with suitable circuit diagrams :
- (i) Power and acceleration control
- (ii) Combined regenerative and rheostatic brake control.

15. (a) Discuss the salient aspects of the speed control scheme for three phase induction motors using a.c. voltage controllers.

Or

- (b) With schematic diagram, explain a slip power recovery scheme for a three phase induction motor.
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