24421

B. Tech. 7th Semester (Electrical Engg.)
Examination, December–2015

ELECTRIC DRIVES AND CONTROL

Paper–EE-403-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question No. 1 is compulsory*** *and attempt* ***one*** *question from each of* ***four*** *sections. All questions carry equal marks.*

1. (a) Mention the various factors that influence the choice of electric drives.

(b) List advantages of electric drives over mechanical drives.

(c) Describe dc dynamic braking.

(d) Explain the importance of AC voltage regulator for speed control of a 3 phase induction motor.

(e) Draw and explain the circuit diagram of a chopper controlled DC series motor drive. 5×4=20

Section–A

2. (a) Describe the microprocessor based control of electric drives. 10

(b) Describe the operation of a closed loop position control system. 10

3. Explain fully the various classes of motor drives. 20

Section–B

4. Explain Load equalization and determination of moment of intertia of the flywheel. 20

5. (a) Explain multiquadrant operation for electric drives. 10

   (b) Derive fundamental Torque equation for electric drives. Also explain the concept of dynamic torque. 10

Section–C

6. (a) A 220V, 200A, 800rpm dc separately excited motor has an armature resistance of 0.06Ω. The motor armature is fed from a variable voltage source with an internal resistance of 0.04Ω. Calculate internal voltage of the variable voltage source, when the motor operating in regenerative braking at 80% of the rated motor torque and 66 rpm. 10

   (b) Describe speed torque curves for dynamic braking. 10

7. (a) Explain Permanent magnet sine fed drives. 10

   (b) Write a note on Acceleration control of DC motor drives. 10

Section–D

8. Describe rotor resistance control in induction motor drives. 20

9. Explain static Scherbius system and static Kramer system for induction motor drives. 20