

Roll No.

24421

B. Tech. 7th Semester (Electrical Engg.)

Examination – December, 2014

ELECTRIC DRIVES AND CONTROL

Paper : EE-403-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. (a) Explain status of a. c. and d. c. drives. 4
- (b) What are the advantages of electrical drive over mechanical drive ? 4
- (c) Explain the application of drives in textile mills and its characteristics. 4
- (d) Describe D.C Dynamic Braking. 4
- (e) What are the main assumptions for steady state stability in electrical drives ? 4

SECTION – A

2. What do you understand by electric drives ? What are the applications of electric drives ? Classify electric drives in detail ? 20
3. (a) Describe microprocessor based control of electric drives. 10
- (b) Explain the operation of a closed loop position control scheme. 10

SECTION – B

4. (a) Explain multi-quadrant operation for electric drives. 10
- (b) Derive fundamental Torque equation for electric drives. Also explain the concept of dynamic torque. 10
5. A motor has a continuous rating of 100KW. The heating and cooling time constants are 50 and 70 min respectively. The motor has a maximum efficiency at 80% full load and is employed in an intermittent periodic load cycle consisting of a load period of 10 min followed by no load period of 10 min. Calculate the value of the load in KW during the load period. 20

SECTION – C

6. (a) A 220 v, 200 A, 800 rpm dc separately excited motor has an armature resistance of 0.06 ohm. The motor armature is fed from a variable voltage source with an internal resistance of 0.04 ohm. Calculate internal voltage of the variable voltage source when the motor is 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. Write Technical notes :
- (a) Switched Reluctance machine drives. 10
- (b) Permanent Magnet brushless Dc drives 10

SECTION – D

8. (a) When operating in regenerative braking ,the I.M slip should not be allowed to exceed the breakdown slip. Why ? 10
- (b) Describe static Kramer system. 10
9. Describe rotor resistance control in I.M drives. 20