



8E8042	Roll No. _____	Total No. of Pages : 2
	8E8042 B.Tech. VIII Semester (Main/Back) Examination, April/May - 2017 Electrical and Electronics Engineering 8EX2A Electric Drives and Their Control Common with 8EE2A	

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit-I

1. a) What are the advantages and disadvantages of electric drives. (4)
- b) Explain the operation of a closed-loop speed control scheme with inner current control loop. What are various functions of inner current control loop? (12)

(OR)

1. a) Explain the four quadrant operations in motor. (8)
- b) Derive the mathematical expression for steady state stability of equilibrium point. (8)

Unit-II

2. a) Explain electric braking for D.C. separately excited motor, with suitable connection diagrams and speed - torque curves. (12)
- b) Explain the dynamic braking for D.C. series motor. (4)

(OR)

2. a) Discuss operation of a dual converter in different modes, feeding a separately excited dc motor drive. (8)
- b) Explain working of current control loop and speed control loop for close loop control of separately excited D.C. motor drive. (8)

Unit-III

3. a) Explain the stator voltage control for speed control of induction motor. Why this method suitable for fan and pump drives. (10)
- b) What are the advantages and disadvantages of electrical braking? Explain plugging braking. (6)

(OR)

3. Explain the following braking in induction motor drives : (2×8=16)
- a) Dynamic braking
- b) Regenerative braking

Unit-IV

4. a) Explain using a power circuit how the speed of an induction motor drive can be controlled by using current source inverter. (10)
- b) Compare CSI fed induction motor drive with VSI fed drive. (6)

(OR)

4. a) Explain static rotor resistance control in closed loop speed control. (8)
- b) Draw and explain a closed-loop operation for a static Kramer controlled drive. (8)

Unit-V

5. a) Explain the power factor control of synchronous motor drive. (6)
- b) Explain the braking of synchronous motor with VSI. Draw the speed torque characteristic for regenerative braking. (10)

(OR)

5. a) Explain the control of synchronous motor using current source inverter. (8)
- b) Explain the control characteristics of an open loop V/f controlled synchronous motor. (8)

