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8E 8042	Roll No. <u>15EEBEE078</u>	[Total No. of Pages : <u>2</u>]
	8E 8042	
	B.Tech. VIII - Semester (Main&Back) Examination, April - 2019 Electrical & Electronics Engg. 8EX2A Electric Drives and Their Control Common with EE,EX	

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 suitably be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Differentiate between active and passive load torques with example? (8)
- b) Explain the operation of a closed loop speed control scheme with inner current control loop. (8)

(OR)

1. a) Suggest the suitable conventions about the signs of torque and speed for multi quadrant operations of drives. Also explain the four quadrant operation in motor? (8)
- b) Explain the load equalization in electric drives. (8)

Unit - II

2. a) Explain electric braking of DC separately excited motor with suitable connection diagrams and speed torque curves? (8)
- b) What are the power limitations in armature voltage control in DC drives? (8)

(OR)

2. a) Differentiate between regenerative braking, dynamic braking and plugging. (8)
- b) Explain the construction and working of chopper controlled DC drives. (8)

Unit - III

3. a) The usefull load torque of 3 - phas, 6- pole, 50 Hz induction motor is 162.84Nm. The rotor emf is observed to make 90 cycles per minute. Calculate:
- i) Motor output
 - ii) Copper loss in motor
 - iii) Motor input
 - iv) Efficiency if mechanical torque lost in windage and friction is 20.36 Nm and stator losses are 830W. (8)
- b) Explain the stator voltage control for speed control of induction motor. (8)
- (OR)
3. a) Discuss and explain the dynamic braking in induction motor drives. (8)
- b) Write a short note on operation of Voltage Source Inverter (VSI) (8)

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. (8)
- b) Explain the slip power recovery scheme with stator sherbius drive in brief.(8)
- (OR)
4. a) Describe the cycloconverter fed induction motor drive. (8)
- b) Draw and explain a closed loop operation for a static kramer controlled drive. (8)

Unit - V

5. a) Describe the VSI fed self controlled synchronous motor drive. (8)
- b) Explain the control of synchronous motor with current source inverter. (8)
- (OR)
5. a) Explain the braking of synchronous motor with VSI. Draw the speed torque characteristics for regenerative braking. (8)
- b) Write a short note on separately controlled synchronous motor drive. (8)