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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2024 Supplementary Examinations

Programme: B.E.   Semester: VI
Branch: Electrical and Electronics Engineering   Duration: 3 hrs.
Course Code: 19EE6PE3ED   Max Marks: 100
Course: Control of Electric Drives

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

			UNIT - I	CO	PO	Marks
1	a)		With a neat block diagram, explain the various components of an Electric Drive.	CO1	PO1	**10**
	b)		Explain the speed torque conventions and multi quadrant operation of a motor driving hoist load.	CO1	PO2	**10**
			UNIT - II			
2	a)		Analyze the performance of separately excited DC motor fed from single phase semi converter with the help of circuit diagram and relevant waveforms.	CO3	PO1	**12**
	b)		A 220V, 200A, 800 rpm 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 the internal voltage of the variable voltage source when the motor is operating in regenerative braking at 80% of the rated motor torque and 600 rpm.	CO3	PO2	**08**
			OR			
3	a)		With a neat diagrams and waveforms, explain 3 –phase fully controlled rectifier control of separately excited D.C Motor	CO3	PO1	**10**
	b)		A 220V,970 rpm,100 A DC separately excited motor has an armature resistance of 0.05Ω.It is braked by plugging from an initial speed of 1000 rpm.Calculate: (i) Resistance to be placed in the armature circuit to limit braking current to twice the full load. (ii) Braking torque. (iii) Torque required when speed fallen to Zero.	CO3	PO2	**10**
			UNIT - III			
4	a)		Explain the effect of unbalanced source voltages and single phasing on 3-phase induction motor.	CO4	PO3	**10**
	b)		With a neat sketch demonstrate the starting methods of the Induction motor.	CO4	PO1	**10**

			UNIT - IV			
5	a)		Analyze the speed control of induction motor using stator voltage control. Discuss its implementation using ac voltage controllers and mention its limitation.	CO4	PO1	**10**
	b)		Explain V/F control with relevant characteristics and also explain what is necessary of maintaining the V/F ration constant	CO4	PO3	**10**
			OR			
6	a)		Define and explain slip power recovery and explain speed control of static Karmer's drive.	CO4	PO3	**10**
	b)		Demonstrate the control of the induction motor by using the current source inverter	CO4	PO3	**10**
			UNIT - V			
7	a)		With a neat process flow diagram, explain the process flow of textiles Mill and also list the requirement	CO2	PO1	**10**
	b)		With a neat sketch explain different types of rolling mills.	CO2	PO1	**10**

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