Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U2501

M.E. DEGREE EXAMINATION, APRIL / MAY 2025

Second Semester

Power Electronics and Drives

21PPE201 – DC & AC DRIVES

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART – A (5 x 20 = 100 Marks)

1.	(a)	Choose a SCR based power circuit fed from a DC supply to control the speed of a separately excited DC motor in both directions and Analyze its performance.	CO3 - Ana	(20)
		Or		
	(b)	Analyze the performance of multi quadrant operation of chopper fed DC series motor.	CO3 - Ana	(20)
2.	(a)	Analyze the torque slip characteristics of Wound Rotor Induction motor by Rotor Resistance control.	CO3 - Ana	(20)
		Or		
	(b)	Analyze the torque slip characteristics of Wound Rotor Induction motor by Static Kramer Drive based Slip power Recovery Scheme.	CO3 - Ana	(20)
3.	(a)	A 6MW 3 Phase 11 KV, star connected 6 pole 50 Hz 0.9 lagging power factor synchronous motor has synchronous reactance equal to 9Ω and armature resistance equal to 0Ω. The rated field current is 50 A. The machine is controlled by variable frequency control at constant V/F ratio up to the base speed and at constant voltage above base speed. Determine i. Torque and field current for the rated armature current, 750 RPM and 0.8 leading power factor. Armature current and power factor for half the rated motor torque, 1500 rpm and rated field current.	CO2 - App	(20)
		OR		

	(b)	A 7 MW 3 phase 12 KV star connected 6 pole 50 Hz 0.9 leading power factor synchronous motor has Xs=10Ω,Rs=0Ω. The rated field current is 40 A. The machine is controlled by variable frequency control at constant V/F ratio up to the base speed and at constant voltage above base speed. Determine i. Torque ii. The field current for the rated armature current at 750 rpm and 0.8 leading power factor.	CO3 - App	(20)
4.	(a)	Demonstrate the principle of direct vector control method for a PWM voltage fed inverter drive.	CO4 - Ana	(20)
		OR		
	(b)	Demonstrate the principle of indirect or Feed Forward vector control method for a PWM voltage fed inverter drive	CO4 - Ana	(20)
5.	(a)	Analyze the Performance of Micro computer control of dc dives .	CO5 - Ana	(20)
		OR		
	(b)	Select the suitable Drive for Textile mills and Analyze its Characteristics	CO5 - Ana	(20)