

Fourth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Electrical Drives and Control

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Explain with block diagram, different parts of electric driver.	10	L2	CO1
	b.	Write a brief note on various power converter used in electric drives.	10	L3	CO1
OR					
Q.2	a.	Explain the speed torque conventions and multi-quadrant operation of motor driving a hoist load.	10	L2	CO1
	b.	Write a brief note on nature and classification of load torques.	10	L3	CO1
Module – 2					
Q.3	a.	Illustrate different classes of motor duty with examples of applications for each class.	10	L3	CO2
	b.	Explain with block diagram closed loop speed control of motor using phase locked loop (PLL).	10	L2	CO2
OR					
Q.4	a.	Demonstrate closed loop speed control of multi-motor driver.	10	L3	CO2
	b.	Explain various methods to determine motor rating using Equivalent current, torque and power methods for fluctuating and intermittent loads.	10	L2	CO2
Module – 3					
Q.5	a.	Explain single phase fully controlled rectifier control of separately excited DC motor. Also obtain equations for average output voltage V_a . Assume discontinuous conduction mode.	10	L2	CO3
	b.	Write a brief note on regenerative braking employed to DC motors with speed torque characteristics.	10	L3	CO3
OR					
Q.6	a.	Explain Chopper control of separately excited DC motor for motoring control.	10	L2	CO3
	b.	Illustrate Armature voltage control and field flux control methods of speed control of DC motor.	10	L3	CO3
Module – 4					
Q.7	a.	Explain different starting methods and types of single phase induction motors.	10	L2	CO4
	b.	Explain low cost-three phase brushless DC motor drive.	10	L2	CO4
OR					
Q.8	a.	Explain true synchronous mode or self controlled mode variable frequency control of synchronous motor variable speed drives.	10	L2	CO4
	b.	Discuss DC dynamic braking of single phase induction motor.	10	L2	CO4
Module – 5					
Q.9	a.	Discuss applications areas and functions of microprocessors in drive technology.	10	L2	CO5
	b.	Explain with block diagram microprocessor control of a current source inverter fed synchronous motor.	10	L2	CO5
OR					
Q.10	a.	Explain with diagram working of variable reluctance stepper motor.	10	L2	CO5
	b.	Explain with diagram, working of permanent magnet stepper motor.	10	L2	CO5
