PRN:		Course Code :	ELE2602

Third Year **B. Tech** End Semester Examination Summer 2022

Electric Drives

Day and Date: Thursday, 15/06/2023 Max Marks: **100**

Time : 10.30 to 1.30 PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Discuss the various components of load torques and friction torque.	08	L1	1
	b)	Derive the equivalent values of drive parameters for 1. Rotational motion 2. Translational motion.	08	L1	1
		OR			
	b)	Describe the functions and importance of each block in electric drive.	08	L1	1
Q.2		**Attempt the following**			
	a)	Suggest that, can any single chopper for DC motor control performs the following operations? And discuss the working. i. Single quadrant operation ii. Two quadrant operation iii. Four quadrant operation	08	L2	2
	b)	Illustrate the use of single phase fully controlled converter for DC motor control.	08	L2	2
		OR			
	b)	Illustrate the operation of transformer and uncontrolled rectifier control of DC drive.	08	L2	2
Q.3		**Attempt any two from the following**			
	a)	Why V/f ratio must be constant for speed control of induction motor? And describe the V/f scheme for induction motor control.	08	L3	3
	b)	Illustrate the closed loop control of scherbius drive.	08	L3	3
	c)	Distinguish static krammer's drive for rotor side control on an induction motor with rotor resistance control in detail.	08	L3	3
Q.4		**Attempt any two from the following**			
	a)	Explain the operation of Speed Control of Synchronous Machines in True Synchronous mode.	08	L4	3
	b)	Discuss the operation of VSI fed synchronous motor drive.	08	L4	3
	c)	Briefly discuss Closed loop Speed control of Synchronous Motor using Load commutated Inverter	08	L4	3
Q.5		**Attempt any Two of the following**			
	a)	Interpret the operation of Permanent Magnet Synchronous Motor control.	09	L4	4
	b)	Express the operation of Brushless DC Motor control.	09	L4	4

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	c)	'Stepper Motor gives output in terms of step wise movement' describe with working principle.	09	L4	4
Q.6		**Attempt any Two of the following**			
	a)	Discuss digital control of DC motor using a microprocessor.	09	L5	4
	b)	Relate induction motor speed control using a microcontroller with conventional method.	09	L5	4
	c)	Explain the operation of Speed Control of Synchronous Machines in Self control mode.	09	L5	4

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