Seat No.:	
No.	

GUJARAT TECHNOLOGICAL UNIVERSITY ME - SEMESTER- I • EXAMINATION – WINTER 2014

Subject Code: 2710709 Subject Name: Electrical Drives Time: Instructions:		Code: 2710709 Date:12/01/ 20	Date:12/01/ 2015 Total Marks: 70	
		: Name: Electrical Drives Total Marks:		
	1. 2. 3.	 Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. 		
Q.1	(a)	Draw and explain the speed-torque curves of a 3-phase fully-controlled rectifier	07	
	(b)	Explain semiconductor converter based controlled dynamic braking and composite braking of DC motor.	07	
Q.2	(a)	Explain the multi quadrant operation of DC motor for armature current reversal technique	07	
	(b)	Derive an expression for the critical speed $\omega_{\rm mc}$ of a separately excited DC motor fed from a single-phase half-controlled rectifier.	07	
	(b)	Draw and explain continuous and any one discontinuous mode of operation of a 3-Phase fully controlled rectifier fed dc motor.	07	
Q.3	(a) (b)	Explain equal pulse width modulation with neat diagram. Draw & explain block diagram of electric drive and significant of each block.	07 07	
Q.3	(a)	OR Explain the effect of armature current ripple on the performance of DC	07	
	(b)	motor controlled by a rectifier. What is speed regulation? Explain the concept of closed-loop speed control technique for separately excited DC motor.	07	
Q.4	(a)	Discuss the method of speed control of a slip ring induction motor by injecting	07	
	(b)	Explain the CSI based Induction motor drive system.	07	
0.4	(a)	OR Evaluin with next diagram the four quadrant energian of heigt	07	
Q.4	(a) (b)	Write a brief note on static scherbius drive.	07 07	
Q.5	(a)	Derive the equation of torque for a wound field salient pole synchronous motor operating from a voltage source of constant frequency. Hence, draw the torque angle characteristics for the same	07	
	(b)	Write a brief note on current controlled PWM inverter as a means to control the speed control of AC motors.	07	
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Q.5 (a) With neat diagram explain closed-loop slip-speed control for controlling 07 the speed of a VSI fed induction motor. Clearly explain the function of each block used.

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