Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014

Subject code: 730704 **Date: 27-11-2014**

Subject Name: Advanced Electrical Drives

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Describe difference between scalar and vector control method of electrical drive.	**07**
	(b)	Explain the Inverter Control strategy to run BLDC motor. Only prepare lookup table to run BLDC motor in clockwise and anticlockwise direction	**07**
Q.2	**(a)**	Develop the mathematical model of Induction Motor in arbitrary reference frame	**07**
	(b)	Explain the basics construction of Brushless DC motor. Also explain how BLDC motor rotates	**07**
		OR	
	(b)	Obtain the expression of torque in terms of Flux Linkages.	**07**
Q.3	**(a)**	Enlist methods of flux vector estimation in direct vector control and discuss the current model in detail	**07**
	(b)	Draw the block diagram of sensorless vector control of PMSM	**07**
		OR	
Q.3	**(a)**	Explain the indirect vector control of Induction motor with open loop flux control	**07**
	(b)	Explain the space vector theory for AC machine	**07**
Q.4	**(a)**	Write a short not on Linear Induction Motor.	**07**
	(b)	Write a short note on Hysteresis Motor	**07**
		OR	
Q.4	**(a)**	Discuss the vector control strategies for Synchronous Motor.	**07**
	(b)	Show different Converters for Switched Reluctance Motor Drives and explain freewheeling diode capability in detail.	**07**
Q.5	**(a)**	Write a short not on stepper Motor and also write its application.	**07**
	(b)	Write a short not on Direct torque Control (DTC) of Induction Motor	**07**
		OR	
Q.5	**(a)**	Write a short not on Scalar control AC drive and also explain disadvantages of its.	**07**
	(b)	Explain Dynamic d-q modeling of induction machines	**07**

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