Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II– EXAMINATION – WINTER - 2016

Subject Code: 2724501 **Date: 18/11/ 2016**

Subject Name: Solid State AC Drives

Time: 2:30 pm to 5:00 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)**	Write a brief note on Static Kramer Drive	**07**
	(b)	What is the difference between scalar control and vector control of induction motor drives? Explain merit and demerits of it.	**07**
Q.2	**(a)**	Variable frequency control of Induction Motor is more efficient than stator voltage control, Why?	**07**
	(b)	Explain closed loop speed control with V/f control and slip regulation.	**07**
		OR	
	(b)	Explain closed loop Current Source Inverter (CSI) drives.	**07**
Q.3	**(a)**	Make comparison between Current Source Inverter (CSI) and Voltage Source Inverter (VSI) drives. Why stator voltage control is suitable for speed control of induction motors in fan and pump drives?	**07**
	(b)	Explain how a voltage source inverter fed induction motor is operated in dynamic braking.	**07**
		OR	
Q.3	**(a)**	Explain chopper based rotor resistance control of an induction motor.	**07**
	(b)	Explain open loop V/f speed control of induction motor with voltage fed inverter.	**07**
Q.4	**(a)**	Explain current controlled voltage fed inverter drive for induction motor.	**07**
	(b)	Explain speed control of induction motor with closed loop torque and flux control for V/f control with help of block diagram.	**07**
		OR	
Q.4	**(a)**	Explain Brush and Brushless DC excitation for wound field synchronous machine.	**07**
	(b)	Explain how the sectors are identified for switching of inverter switch in DTC.	**07**
Q.5	**(a)**	Explain principle of vector control of induction motor drives with the help of block diagram.	**07**
	(b)	How the flux vector estimation is to be done for indirect vector control method?	**07**
		OR	
Q.5	**(a)**	Explain power factor control of synchronous motor with changing excitation for constant load torque.	**07**
	(b)	What is Direct torque control of induction motor? Explain how it is useful for fast torque response.	**07**

****