Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–II EXAMINATION – SUMMER 2015

Subject Code: 2724501 **Date: 28/05/2015**

Subject Name: Solid State AC Drives

Time: 02:30 PM to 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)**	Explain cascaded induction machines method for speed control of three phase induction motor.	**07**
	(b)	Explain slip power recovery method for three phase induction motor.	**07**
Q.2	**(a)**	Write a brief note on Static Kramer Drive.	**07**
	(b)	Explain speed control of induction motor with closed loop V/f control and slip regulation with help of block diagram.	**07**
		OR	
	(b)	Explain speed control of induction motor with closed loop torque and flux control for V/f control with help of block diagram.	**07**
Q.3	**(a)**	Explain vector control of current-fed inverter drive for induction motor.	**07**
	(b)	Explain direct vector control of induction motor with voltage model.	**07**
		OR	
Q.3	**(a)**	Explain stator flux oriented vector control of induction motor	**07**
	(b)	Explain indirect vector control of induction motor with open loop flux control.	**07**
Q.4	**(a)**	Explain current controlled voltage fed inverter drive for induction motor.	**07**
	(b)	Explain open loop V/f speed control of induction motor with voltage fed inverter.	**07**
		OR	
Q.4	**(a)**	Explain torque speed curve of induction motor with V/f control, showing effect of frequency variation, load torque and supply voltage changes. Also explain acceleration / deceleration characteristics.	**07**
	(b)	Explain current fed inverter drive with speed and flux control for induction motor.	**07**
Q.5	**(a)**	Explain control strategy of direct torque control (DTC) in induction motor.	**07**
	(b)	Explain Brush and Brushless D.C. excitation for wound field synchronous machine	**07**
		OR	
Q.5	**(a)**	Explain self-controlled synchronous motor drive employing load commutated thyristor inverter.	**07**
	(b)	Derive torque expression with stator and rotor flux in direct torque control for induction motor.	**07**

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