Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II– • EXAMINATION – SUMMER 2017

Subject Code: 2724501 **Date:26/05/2017**

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 slip power recovery method for induction motor.	**07**
	(b)	Make comparison between Current Source Inverter (CSI) and Voltage Source Inverter (VSI) drives.	**07**
Q.2	**(a)**	Explain constant torque and constant power region of 3-phase induction motor 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 direct vector control of induction motor with current model. Give the limitation of the model.	**07**
	(b)	What is the difference between scalar control and vector control of induction motor drives? Explain merit and demerits of it.	**07**
		OR	
Q.3	**(a)**	Explain principle of vector control of induction motor drives with the help of block diagram.	**07**
	(b)	Explain the field oriented control method for induction motor.	**07**
Q.4	**(a)**	Explain control strategy for DTC drives with help of block diagram.	**07**
	(b)	Explain open loop V/f speed control of induction motor with voltage fed inverter.	**07**
		OR	
Q.4	**(a)**	Explain Chopper based rotor resistance control of an induction motor.	**07**
	(b)	Write a brief note on Static Kramer Drive.	**07**
Q.5	**(a)**	Explain Brush and Brushless D.C. excitation for wound field synchronous machine.	**07**
	(b)	Explain self-controlled synchronous motor drive employing load commutated thyristor inverter.	**07**
		OR	
Q.5	**(a)**	Derive torque expression with stator and rotor flux in direct torque control for induction motor.	**07**
	(b)	Explain how a voltage source inverter fed induction motor is operated in dynamic braking.	**07**

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