Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II(New course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 2724501 **Date: 09/12/2015**

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)**	Explain speed control of 3-phase induction motor with rotor circuit chopper.	**07**
	(b)	Explain torque speed characteristic of 3-phase induction motor by variable frequency.	**07**
Q.2	**(a)**	Explain constant torque and constant power region of 3-phase induction motor drive.	**07**
	(b)	Explain Slip Power Recovery Scheme of 3-phase induction motor.	**07**
		OR	
	(b)	Explain how a voltage source inverter fed induction motor is operated in dynamic braking.	**07**
Q.3	**(a)**	Explain closed loop speed control with V/f control and slip regulation. Give the limitation of the model.	**07**
	(b)	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**
		OR	
Q.3	**(a)**	Explain open loop V/f speed control of induction motor with voltage fed inverter.	**07**
	(b)	What is the difference between scalar control and vector control of induction motor drives? Explain merit and demerits of it.	**07**
Q.4	**(a)**	Explain the field oriented control method for induction motor.	**07**
	(b)	Explain control strategy for DTC drives with help of block diagram.	**07**
		OR	
Q.4	**(a)**	Explain vector control of current-fed inverter of induction motor.	**07**
	(b)	Explain principle of sensorless vector control method for Induction Motor? List out the different method of speed estimation. Explain one of the methods.	**07**
Q.5	**(a)**	Explain power factor control of synchronous motor with changing excitation for constant load torque.	**07**
	(b)	Explain current controlled voltage fed inverter drive for induction motor.	**07**
		OR	
Q.5	**(a)**	Explain self-controlled synchronous motor drive employing load commutated thyristor inverter.	**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**