Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II (Old course)• REMEDIAL EXAMINATION – SUMMER 2015

Subject Code: 1724501 **Date:12/05/2015**

Subject Name: Solid State AC Drives

Time: 02:30 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 the field oriented control method for induction motor.	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
Q.2	(a)	Explain vector control of current-fed inverter of induction motor.	07
	(b)	Explain slip power recovery method for induction motor.	07
		OR	
	(b)	Explain how a voltage source inverter fed induction motor is operated in dynamic braking.	07
Q.3	(a)	Explain indirect vector control of induction motor with slip and flux estimation from machine parameters.	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 open loop V/f control of voltage source inverter fed for induction motor. What is 'voltage boosting' in a voltage-source inverter, and why is it necessary?	07
	(b)	Explain principle of vector control of induction motor drives with the help of block diagram.	07
Q.4	(a)	Explain power factor control of synchronous motor with changing excitation for constant load torque.	07
	(b)	Variable frequency control of Induction Motor is more efficient than stator voltage control, Why?	07
		OR	
Q.4	(a)	What is the principle of Direct torque control of induction motor drives? How it is differ from field control?	07
	(b)	What is the difference between self-controlled and true synchronous mode of variable frequency control of synchronous motor? Why self-controlled motor is free from hunting?	07
Q.5	(a)	Write a brief note on Static Kramer Drive.	07
	(b)	Explain Brush and Brushless d.c. excitation for wound field synchronous machine.	07
		OR	
Q.5	(a)	How the flux vector estimation is to be done for indirect vector control method?	07
	(b)	What is Direct torque control of Induction motor? Explain how it is useful for fast torque response.	07

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