Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2016

Subject Code:172402 **Date:07/05/2016**

Subject Name:Industrial Drives and Control - II

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)**	Discuss operational behavior of Induction motor with unbalanced rotor impedance. Support your answer by necessary diagrams.	**07**
	(b)	Describe working of Switch Reluctance Motor with neat diagrams.	**07**
Q.2	**(a)**	Write a technical note on: Vector control of synchronous motor.	**07**
	(b)	Explain the basic principle of sensor less control of Induction Motor Drives.	**07**
		OR	
	(b)	Discuss basic principle of DTFC with necessary diagrams.	**07**
Q.3	**(a)**	"Stator voltage control method is not suitable for constant load torque drive", justify the statement.	**07**
	(b)	Discuss advantages of Power Electronics based speed control methods over traditional methods for induction motor.	**07**
		OR	
Q.3	**(a)**	Enlist various methods for speed control of Induction motor. Explain V/f control of IM with necessary equations.	**07**
	(b)	Explain speed control of IM using power electronics converter for Rotor Resistance method.	**07**
Q.4	**(a)**	Discuss basic principle of vector control with necessary diagrams.	**07**
	(b)	Derive equation for slip power. Also explain traditional method for slip power recovery.	**07**
		OR	
Q.4	**(a)**	Describe implementation of indirect flux oriented vector control method for IM.	**07**
	(b)	Write a short note on: Static Kramer drive for slip power recovery.	**07**
Q.5	**(a)**	Explain dynamic modeling of Induction Motor with necessary equations.	**07**
	(b)	Enlist speed control methods for synchronous motor. Discuss adjustable frequency operation in brief.	**07**
		OR	
Q.5	**(a)**	Discuss reference frame theory for induction motor in brief.	**07**
	(b)	Draw & explain self controlled synchronous motor drive using load commutated thyristor based inverter.	**07**

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