Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2710313 **Date: 04/01/2016**

Subject Name: Advance Industrial Drives & Control

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)**	Classify types of BLDC Motor. Discuss construction & working of BLDC Motor.	**07**
	(b)	Draw only the construction of permanent magnet stepper motor. Describe operation of unipolar drive circuit for variable reluctance stepper motor with necessary diagrams.	**07**
Q.2	**(a)**	Enlist & explain various factors affecting for selection of AC motor drive.	**07**
	(b)	Discuss dynamic modelling of Induction motor with necessary diagrams & Equations.	**07**
		OR	
	(b)	Write a short note on Dynamic Model of separately excited DC Motor.	**07**
Q.3	**(a)**	Draw speed-torque characteristics for DC shunt, DC series & PMDC motor. Derive equation for speed for series DC motor.	**07**
	(b)	Discuss Self-controlled synchronous motor drive employing load commutated inverter with neat circuit diagram.	**07**
		OR	
Q.3	**(a)**	Classify various speed control methods of DC motor. Describe it with necessary equations.	**07**
	(b)	Describe Cycloconverter fed synchronous motor drive with neat circuit diagram.	**07**
Q.4	**(a)**	Discuss Vector control of synchronous motor with necessary diagrams & equations.	**07**
	(b)	Discuss Direct Torque Control (DTC) method for speed control of Induction Motor.	**07**
		OR	
Q.4	**(a)**	Describe various control strategy for control of Synchronous Reluctance Motor.	**07**
	(b)	Explain principle of indirect vector control for IM with necessary diagrams.	**07**
Q.5	**(a)**	"Stator voltage control method is not suitable for constant load torque drive", Justify the statement.	**07**
	(b)	Enlist various advantages of multilevel converters used for induction motor drive in brief.	**07**
		OR	
Q.5	**(a)**	Discuss the concept of sensor less vector control for induction motor.	**07**
	(b)	Write a short note on Model Reference Adaptive System.	**07**

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