Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2710313 **Date:19/05/2016**

Subject Name: Advance Industrial Drives & Control

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)**	Enlist various types of stepper motor. Explain concept of Micro-stepping.	**07**
	(b)	Discuss working of Switch Reluctance Motor with neat diagrams.	**07**
Q.2	**(a)**	Write a short note: Dynamic model of Separately Excited DC Motor.	**07**
	(b)	Draw basic block diagram of Electric Drive System. Discuss each block in detail.	**07**
		OR	
	(b)	State various requirements of Electric Drive System. Also discuss advantages of Electric Drive.	**07**
Q.3	**(a)**	"It is dangerous to operate DC Series motor without load", Justify statement with necessary diagrams & equations.	**07**
	(b)	Explain operation of 1-phase controlled rectifier fed separately excited DC motor with necessary waveforms.	**07**
		OR	
Q.3	**(a)**	List out various advantages of power electronics based speed control methods over traditional methods of DC motor.	**07**
	(b)	Discuss four quadrant operation of DC motor. Draw only chopper circuit used to operate DC motor in Forward Running & Forward Breaking mode.	**07**
Q.4	**(a)**	Explain speed control of synchronous motor using variable frequency method.	**07**
	(b)	Discuss speed control of Induction Motor using stator voltage control method in detail. Also state limitation of this method.	**07**
		OR	
Q.4	**(a)**	Discuss the operation of cyclo-converter fed self controlled synchronous motor drive.	**07**
	(b)	Write a short note on Direct Torque Control method of Induction Motor.	**07**
Q.5	**(a)**	Explain Model Reference Adaptive System for IM.	**07**
	(b)	Discuss Space Vector Pulse Width Modulation methods for speed control of Induction Motor.	**07**
		OR	
Q.5	**(a)**	Enlist various advantages of multilevel converters used for induction motor drive in brief.	**07**
	(b)	Discuss in brief: Sensor less control of Induction Motor.	**07**

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