Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B E Sem-VI Examination May 2011

Subject code: 162404

Subject Name: Industrial Drives &Control - I

Date: 21/05/2011 **Time: 10.30 am To 1.00 pm**

otal Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	List the advantages and disadvantages of thyristorised drives.	**07**
	(b)	List various methods of speed control of dc shunt motor. Explain any two in detail	**07**
Q.2	**(a)**	Derive the equation of the fundamental torque indicating dynamics of electric drives.	**07**
	(b)	Explain Ward-Leonard system of dc drives with its advantages and disadvantages.	**07**
		OR	
	(b)	List the performance parameters of the dc drives. Define each of them.	**07**
Q.3	**(a)**	Explain the speed control of a separately excited dc motor by a single-phase semi converter. Draw the voltage and current waveforms for continuous and discontinuous motor current.	**07**
	(b)	Explain Dynamic and Composite braking of separately excited dc motor with chopper control.	**07**
		OR	
Q.3	**(a)**	Explain forward motoring and braking control of separately excited dc motor using chopper control with waveforms.	**07**
	(b)	Explain the working principle of ideal dual converter. Also explain the cosine firing control scheme.	**07**
Q.4	**(a)**	Explain motoring operation of chopper controlled separately excited dc motor.	**07**
	(b)	Derive the motor transfer function for separately excited dc motor.	**07**
		OR	
Q.4	**(a)**	Explain Current Control Loop for separately excited dc motor drive.	**07**
	(b)	Explain in detail the Phase Locked Loop control of the dc motor drive using block diagram.	**07**
Q.5	**(a)**	Explain four quadrant variable speed drive employing a dual converter with non simultaneous control.	**07**
	(b)	Explain the Microcomputer control of dc drives using block diagram.	**07**
		OR	
Q.5	**(a)**	Explain semi converter operation of full converter for series dc motor drive with waveforms.	**07**
	(b)	Explain the Servo Drives in Detail.	**07**

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