GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2018

Subject Code:2162404   Date:16/11/2018
Subject Name:Industrial Drives & Control-I
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)	Explain working Principle of DC Drives.	03
	(b)	State advantages of use solid state controls in DC Motors.	04
	(c)	Draw and Explain Static Ward Leonard System.	07
Q.2	(a)	Explain steady state & transient stability of electric drive.	03
	(b)	Determine moment of inertia of a DC motor.	04
	(c)	Derive torque equation of DC motor indicating Dynamics of Electrical Drive.	07
		OR	
	(c)	Explain Quadrant diagram of Speed-Torque Characteristics.	07
Q.3	(a)	Give comparison between Active load torque & Passive load torque.	03
	(b)	Enlist criteria of selection of DC motor.	04
	(c)	Explain closed loop speed control scheme of Separately Excited DC Motor for control of below and above base speed.	07
		OR	
Q.3	(a)	Give classification of DC drives.	03
	(b)	Draw 1- Φ fully controlled converter with freewheeling diode for Separately Excited DC Motor with its waveforms.	04
	(c)	Explain Traction drive employing two stage converter feeding four separately excited motors.	07
Q.4	(a)	Draw the basic power circuit of chopper fed DC series motor drive.	03
	(b)	Discuss two quadrant chopper fed drive.	04
	(c)	Explain single phase semi-converter drives with continuous armature current.	07
		OR	
Q.4	(a)	Explain important of Sensing and feeds back elements in closed loop control of dc drive	03
	(b)	Write a short note on selection of drive for speed reversal.	04
	(c)	Using block diagram & necessary flow chart explain working of microcomputer control of DC Drives.	07
Q.5	(a)	Write a short note on selection of drive for speed reversal	03
	(b)	Explain the comparison between : In phase and phase shifted operation mode of multiphase chopper	04
	(c)	Explain PID controller for DC drives.	07
		OR	
Q.5	(a)	Explain the comparison between: Constant Torque and Constant HP Operation.	03
	(b)	Write a short note on requirement of servo motor drive.	04
	(c)	Explain permanent magnet motor drive.	07

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