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GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI (NEW) EXAMINATION - WINTER 2020

Subject Code:2160913 Date:01/02/2021

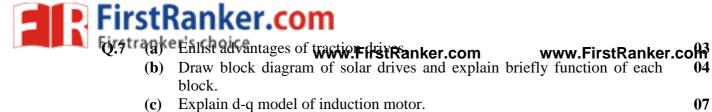
Subject Name: Control of Electrical Drives

Time:02:00 PM TO 04:00 PM Total Marks: 56

Instructions:

- 1. Attempt any FOUR questions out of EIGHT questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

			MARKS
Q.1	(a)	Give six factors to be considered for the selection of drive.	03
	(b)	Enlist functions of power modulator.	04
	(c)	Explain how moment of inertia can be determined for an electrical motor.	07
Q.2	(a)	Give 3points of comparison between converter fed dc drives and chopper fed dc drives.	03
	(b)	Explain components of load torque.	04
	(c)	Explain speed and position control scheme of dc motor using dynamic model of dc motor.	07
Q.3	(a)	Explain working of static scherbius drive.	03
	(b)	Explain V/f control of induction motor.	04
	(c)	Explain the working of 1- ϕ dual converter drive for the speed control of separately excited dc motor .	07
Q.4	(a)	Explain stator voltage control of induction motor.	03
	(b)	Enlist operating modes of doubly fed induction machine. Explain any one of	04
	` /	them in brief.	
	(c)	Explain the 3- ϕ half wave converter drive for the speed control of separately excited dc motor with waveforms at α =60°	07
Q.5	(a)	Draw speed torque characteristics with current source inverter. Show the region of characteristic where flux is more than the rated flux.	03
	(b)	Explain vector control principle of AC motor drive.	04
	(c)	Explain closed loop speed control of induction motor using slip control scheme.	07
Q.6	(a)	Compare VSI fed Induction motor drive with CSI fed induction motor drive on the basis of load commutation, nature of input and PWM technique usage.	03
	(b)	Give four points of comparison between field oriented control and direct torque control.	04
	(c)	Explain closed loop speed control of induction motor using current limit control scheme.	07



(a) Explain desired characteristics for drive used in traction.

(c) explain indirect vector control method for 3- ϕ induction motor.

(b) Write a note on servo motor drives.

Q.8

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03

04

07