Seat No.: _____ Enrolment No.

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 them in brief.	**04**
	(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**

Q.7	**(a)**	Enlist advantages of traction drives.	**03**
	(b)	Draw block diagram of solar drives and explain briefly function of each block.	**04**
	(c)	Explain d-q model of induction motor.	**07**
Q.8	**(a)**	Explain desired characteristics for drive used in traction.	**03**
	(b)	Write a note on servo motor drives.	**04**
	(c)	explain indirect vector control method for 3- ϕ induction motor.	**07**

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