

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021****Subject Code:2172402****Date:23/11/2021****Subject Name:Industrial Drives and Control-II****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Discuss the criteria to select drives.	03
	(b) Explain closed loop v/f control of induction motor.	04
	(c) Explain the dynamic modeling of induction motor.	07
Q.2	(a) Explain the principle of speed control of synchronous motor.	03
	(b) Explain the principle of vector control.	04
	(c) Explain static scherbius drives.	07
OR		
	(c) Explain closed loop control of rotor resistance through power electronic modulator.	07
Q.3	(a) Explain the torque speed characteristic of induction motor with variable frequency.	03
	(b) Explain the analysis of induction motor with unbalanced rotor impedances.	04
	(c) Explain the basic principle of DTFC for voltage fed PWM inverter drives.	07
OR		
Q.3	(a) Explain the torque speed characteristic of induction motor with variable rotor resistance.	03
	(b) Explain the block diagram of AC drives and enlist its advantages and disadvantages.	04
	(c) Enlist the sensor less method for vector control of induction motor and explain any one in detail.	07
Q.4	(a) Explain parameter sensitivity in vector-controlled induction motor drive.	03
	(b) Explain the operating principle of SRM.	04
	(c) Explain self-controlled synchronous motor drives with electronic commutation.	07
OR		
Q.4	(a) Explain the compensation method for vector-controlled induction motor drive.	03
	(b) Explain the basic block diagram of SRM drive.	04
	(c) Explain self-controlled synchronous motor drive using load commutated thyristor inverter.	07
Q.5	(a) Explain the concept of trapezoidal PMAC motor drive.	03
	(b) Why reference frame theory is used in the analysis of electrical machines?	04

- (c) Explain the voltage model of flux vector estimation for direct control of induction motor. **07**

OR

- Q.5** (a) Explain the concept of sinusoidal PMAC motor drive. **03**
(b) Describe various reference frames used to transform three phase abc variables into 2-phase, q_s and d_s axis variables. **04**
(c) Explain indirect vector control of induction motor. **07**
