Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER II EXAMINATION – SUMMER 2017

Subject Code: 2722911 **Date: 26/05/2017**

Subject Name: Industrial Drives

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 reference frame theory for electrical machine.	**07**
	(b)	Explain Modeling of DC machines.	**07**
Q.2	**(a)**	Discuss how the motor efficiency of an inverter fed induction motor varies with frequency.	**07**
	(b)	Explain following term w.r.t. controlled converter. (1) Harmonic factor (2) Displacement factor (3) Input supply power factor	**07**
		OR	
	(b)	Discuss two quadrant chopper circuit for DC motor.	**07**
Q.3	**(a)**	Discuss analysis of chopper fed DC motors.	**07**
	(b)	Explain stator voltage control method for speed control of induction motor. Also discuss why it is suitable for fan type load.	**07**
		OR	
Q.3	**(a)**	Discuss rotor resistance control of induction motor. Also draw its speed Torque characteristics.	**07**
	(b)	Explain advantage of AC drive.	**07**
Q.4	**(a)**	If the speed control of induction motor is achieved by varying the stator voltage, what will be effect on 1.Motor efficiency and 2.Current drawn from the source. Also, enlist various AC voltage controller configurations that can be utilized for stator voltage control.	**07**
	(b)	Explain direct vector control scheme for induction motor.	**07**
		OR	
Q.4	**(a)**	Explain Derating of induction motor due to Harmonics present in supply.	**07**
	(b)	Explain Direct torque control method for induction motor	**07**
Q.5	**(a)**	Discuss the self-control operation of synchronous motor.	**07**
	(b)	Explain torque speed characteristics of AC motor.	**07**
		OR	
Q.5	**(a)**	Explain v/f control of induction motor with neat diagram. State its area of applications.	
	(b)	Discuss multiphase chopper.	**07**