

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2172402**Date:18/11/2016****Subject Name:Industrial Drives & Control-II****Time:10.30 AM to 1.00 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)	Describe the analysis of Induction Motor with 1) Unbalanced rotor impedances 2) Non-sinusoidal voltage supply	07
	(b)	Explain CSI control for IM and compare CSI with VSI giving three points	07
Q.2	(a)	Discuss IM's behavior for non-sinusoidal source voltages.	07
	(b)	Discuss advantages of stator voltage control method for (i) Constant load –torque (ii) Fan type loads	07
		OR	
(b)	Explain the principle behind the variation of the speed of a 3- Φ IM by v/f method. Discuss this for the following two different modes: 1. Operation below rated frequency 2. Operation above rated frequency	07	
Q.3	(a)	Draw and explain the thyristor configuration for a stator voltage controlled reversible-speed Induction Motor Drive. Also draw the speed-torque characteristics for a reversible induction motor drive	07
	(b)	The most versatile and reliable variable-speed drive consists of a cage-rotor Induction Motor which is speed controlled by variation of the stator frequency. Explain variable-frequency operation of Induction Motor. Also draw torque characteristics for this motor at constant volts / Hz.	07
		OR	
Q.3	(a)	Explain the concept of direct vector control of Induction Motor Drive.	07
	(b)	Discuss on parameter sensitivity and compensation of vector controlled Induction Motor	07
Q.4	(a)	Write a short note: Dynamic d-q model of Induction Motor	07
	(b)	Discuss Principle of indirect vector control with necessary diagram	07
		OR	
Q.4	(a)	Discuss on Permanent Magnet AC Motor Drive	07
	(b)	Discuss on speed control of synchronous motor by vector control method	07
Q.5	(a)	Explain the basic principle of DTFC for Voltage fed PWM inverter drives	07
	(b)	Explain block diagram of feed-forward vector control for IM.	07
		OR	
Q.5	(a)	Discuss reference frame theory for induction motor in brief.	07
	(b)	Draw & explain self controlled synchronous motor drive using load commutated thyristor based inverter.	07
