GUJARAT TECHNOLOGICAL UNIVERSITY ME – SEMESTER III (OLD) – EXAMINATION – WINTER-2016

ME = SEVIESTER III (OLD) = EXAMINATION = WINTER-2010			0016
Su	Dject	Code: 750704 Date:27/10/2	2010
Su Ti	bject	Name: Advanced Electrical Drives	=0
Time:02:30 pm to 05:00 pm Total Marks: 7			5: 70
Ins	tructio	DNS: A trampt all questions	
	1. 2.	Make suitable assumptions wherever necessary.	
	3.	Figures to the right indicate full marks.	
Q.1	(a)	Discuss the merits of sensorless speed control over the speed sensed vector control of induction motor.	07
	(b)	Draw the inductance profile of Switched Reluctance Motor. Explain the each step of this profile in detail.	07
Q.2	(a)	Obtain the d-q model of Induction motor in rotor reference frame. Explain each term thus involved.	07
	(b)	Draw and explain the block diagram of synchronously rotating frame machine model with input voltage and output current transformation.	07
	(L)	UK Explain the basics construction of Prushlass DC motor. Also explain how PLDC	07
	(D)	motor rotates. Support your answer with diagrams.	07
Q.3	(a)	Derive the dynamic model of PMSM motor with proper assumptions.	07
	(b)	Explain the open loop flux control with indirect vector control with suitable block diagram.	07
		OR	
Q.3	(a)	Explain the control strategy for Linear Induction motor.	07
	(b)	Explain the different commutation techniques for permanent magnet motor.	07
Q.4	(a)	Enlist the various inverter topologies for Switched Reluctance Motor. Explain the basic topology in detailed.	07
	(b)	Explain the control strategy for Hysteresis motor.	07
		OR	
Q.4	(a)	Explain the principle of vector control with necessary vector and block diagram.	07
	(b)	Draw the block diagram of sensorless vector control of PMSM motor. Explain each block in detail.	07
Q.5	(a)	Write a short not on stepper Motor and also write its application.	07
	(b)	Write a short not on Direct torque Control (DTC) of Induction Motor.	07
		OR	
Q.5	(a)	Explain the space vector theory as applied to rotating machines.	07
	(b)	Explain the working principle of BLDC motor. Prepare the switching table for the same. Draw the complete connection diagram of this system.	07
