Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY			
Su	hiect	ME – SEMESTER II– EXAMINATION – WINTER - 2016 Code: 2724504 Date: 19/11/ 20)16
Su	bject	Name: Advance Electrical Machines	,10
Ti Ins	me: 2 tructic 1. 2. 3.	2:30 pm to 5:00 pm Total Marks: ons: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	70
Q.1	(a)	State the various configurations of stepper motor and explain the hybrid stepper motor with suitable diagram.	07
	(b)	Compare the axial and radial Permanent Magnet Brushless DC Motors.	07
Q.2	(a) (b)	Define following terms for stepper motor: Step angle, Response range, Holding torque, Detent torque, Pulls in torque, Pull out torque, Slew rate Explain relationship between inductance and rotor position in Switched	07 07
		Reluctance Motor.	
	(b)	Derive emf and torque equation of Brushless DC Machine.	07
Q.3	(a) (b)	Discuss bi-polar type converter used to control BLDC motor. Discuss the asymmetric bridge type converter used for Switch Reluctance Motor.	07 07
Q.3	(a)	Explain in brief construction and working of Variable Reluctance Stepper Motor.	07
	(D)	Explain the close loop control of stepper motor with suitable diagrams.	07
Q.4	(a)	Explain in detail the principle of operation and characteristics of Hysteresis	07
	(b)	Explain working of Double Fed Induction Generator (DFIG) with diagram OR	07
Q.4	(a) (b)	Classify the various wind mill generators. Explain working of variable slip wind turbine Generator with diagram.	07 07
Q.5	(a) (b)	Discuss the recent trends in condition monitoring of electrical machines. Illustrate direct saving and pay back analysis of energy efficient motor.	07 07
		OR	
Q.5	(a)	Explain the working principle of Switched Reluctance Motor (SRM) and draw	07

(a) Explain the working principle of 2 method for the equivalent circuit of it.
(b) Write a short note on energy efficient motor Standards.
07