Seat No.: Enrolment No.

Subject Code:131701

Time: 2:30pm to 5:00pm

Subject Name: Electrical Machine

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III EXAMINATION - WINTER 2015

Date:21/12/2015

Total Marks: 70

Inst	tructio	ons:	
	2.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a) (b)	Explain equivalent circuit of 1-phase transformer. Explain construction features & working principle of 3-phase induction motor.	07 07
Q.2	(a) (b)	Explain instrument transformers with their applications. What is the elementary concepts of rotating machines? Explain electromechanical conversion. OR	07 07
	(b)	Explain construction & working principle of 1-phase transformer.	07
Q.3	(a) (b)	Explain parallel operation of 3-phase transformers with necessary conditions. Explain autotransformer. Write its advantages & applications. OR	07 07
Q.3	(a) (b)	Explain torque-slip characteristics of 3-phase induction motor. A particular load is to be driven at about 700 rpm. What should be the number of poles for a three phase induction motor when (i) f= 60 Hz (ii) f= 50 Hz? Calculate the actual speed in each case if the rated slip is 4 %.	07 07
Q.4	(a) (b)	Explain construction features & working principle of synchronous motor. What is hunting? Why damper winding use to reduce hunting? What are the applications of synchronous motor.	07 07
Q.4	(a)	OR Why 1-phase induction is not self start? Explain starting methods of 1-phase	07
	(b)	induction motor. Explain different excitation operating systems of synchronous motor. Compare synchronous motor with 3-phase induction motor.	07
Q.5	(a) (b)	Explain characteristics of different d.c. generators. What is armature reaction? What are the methods to improve armature reaction. OR	07 07
Q.5	(a)	What is cogging and crawling? Compare slip ring induction motor with squirrel	07
	(b)	cage induction motor. Determine the flux per pole of a six pole d.c. generator required to generate 240 V at 500 rpm. The armature winding has 1080 conductors and are lap connected.	07
