Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEM-II Examination May 2012

Subject code: X21101

Subject Name: Electrical Engineering

Date: 23/05/2012 **Time: 10.30 am – 01.00 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 construction of single phase transformer. Derive the e.m.f equation of single phase transformer.	**07**
	(b)	Discuss open circuit and short circuit test on a single phase transformer.	**07**
Q.2	**(a)**	Explain necessity of starter for D.C. motor. Discuss three point starter with appropriate diagram.	**07**
	(b)	Explain different methods for speed control of D.C. shunt motor.	**07**
		OR	
	(b)	Describe different parts of a D.C. machine; their material and functions with the help of a neat diagram.	**07**
Q.3	**(a)**	Explain working principle of 3 phase induction motor. Also give comparison between squirrel cage and slip ring induction motor.	**07**
	(b)	A 3 phase induction motor is wound for 4 poles and is supplied from a 50 Hz supply. Calculate the synchronous speed, rotor frequency and also the speed of the motor when the slip is 3%.	**07**
		OR	
Q.3	**(a)**	Why single phase induction motor is not self starting? Explain any one method to make it self starting.	**07**
	(b)	What is slip of 3 phase induction motor? Discuss its torque slip characteristics.	**07**
Q.4	**(a)**	State various advantages of stationary armature in an alternator. Also differentiate between salient pole and cylindrical rotor type synchronous machine.	**07**
	(b)	Define voltage regulation of an alternator. Also explain any one method to find out voltage regulation of an alternator.	**07**
		OR	
Q.4	**(a)**	Explain in brief construction and working principle of universal motor	**07**
	(b)	Explain in brief construction and working principle of Scharge motor.	**07**
Q.5	**(a)**	Explain the working principle and construction of synchronous motor. Also explain its applications.	**07**
	(b)	Explain different operating conditions for a synchronous motor.	**07**
		OR	
Q.5	**(a)**	Explain working principle and construction and applications of A.C.series motor.	**07**
	(b)	Explain comparison between 3 phase induction motor with 3 phase synchronous motor.	**07**

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