Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: X 21101 **Date: 16/01/2013**

Subject Name: Electrical Engineering

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)**	Explain construction and working of D.C. generator.	**07**
	(b)	A 4-pole, long-shunt lap wound generator supplies 25 kW at a terminal voltage of 500 V. The armature resistance is 0.03 Ω, series field resistance is 0.04 Ω and shunt field resistance is 200 Ω. The brush drop may be taken as 1.0 V. Determine the e.m.f. generated. Also calculate the No. of conductors if the speed is 1200 r.p.m. and flux per pole is 0.02 Weber. Neglect armature reaction.	**07**
Q.2	**(a)**	Explain different methods for speed control of D.C. shunt motor.	**07**
	(b)	List different type of starters for three phase induction motor. Explain any one in detail.	**07**
		OR	
	(b)	Explain necessity of starter for D.C. motor. Discuss three point starter with appropriate diagram.	**07**
Q.3	**(a)**	State the type of three phase induction motor. Explain how rotor rotates when three phase induction motor is connected across three phase supply & Define Slip.	**07**
	(b)	Explain in brief construction and working principle of Scharge motor.	**07**
		OR	
Q.3	**(a)**	State the various types of single phase AC motors. Explain Capacitor start and induction run type 1 phase induction motor.	**07**
	(b)	Explain construction and working Principle of shaded pole motor.	**07**
Q.4	**(a)**	Draw and explain the vector diagrams when the single phase transformer is on ON- Load condition.	**07**
	(b)	The open circuit & short circuit tests on 10 KVA 200/400V, 50Hz transformer gives following results: OC test: Voc = 200V, Ioc = 1.3 A, Woc = 120W (HV side open) SC test: Vsc = 22 V, Isc =30 A, Wsc = 200W (supply was on HV side) Find parameters of equivalent circuit .	**07**
		OR	
Q.4	**(a)**	State different application and types of Servomotor.	**07**
	(b)	Explain double field revolving theory.	**07**
Q.5	**(a)**	Explain the difference between cylindrical and salient pole rotors	**07**

used in large alternator . Define (1) pitch factor (2) Distribution factor (3) form factor.

(b) Define Voltage regulation of alternator. State various methods to find voltage regulation and Explain any one method in detail. **07**

OR

Q.5 **(a)** Explain the operating principle of synchronous motor. Draw the vector diagrams when the synchronous motor runs at under excitation and over excitation. **07**

(b) Explain construction and working and application of Universal motor. **07**

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