Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II • EXAMINATION – SUMMER 2013

Subject Code: X21101 Date: 06-06-2013

Subject Name: Electrical Engineering

Time: 02.30 pm - 05.00 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 the functions of various components of D.C Generator.	**07**
	(b)	What is requirement of Starter? Explain working of three point starter.	**07**
Q.2	**(a)**	Explain power stages of three phase induction motor.	**07**
	(b)	Explain why single phase induction motors are not self starting? How it becomes self starting?	**07**
		OR	
	(b)	Explain capacitor start capacitor run single phase induction motor.	**07**
Q.3	**(a)**	Draw and explain the vector diagrams when the single phase transformer in on ON- Load condition.	**07**
	(b)	A 4-pole , 500 V shunt motor has 720 wave connected conductors in the armature. The field resistance is 250 Ω and line current is 40 A. The flux per pole is 0.03 Wb. The armature resistance is 0.2 Ω and the contact drop is 1 V per brush. Calculate the full load speed of the motor.	**07**
		OR	
Q.3	**(a)**	Explain working principle of single phase transformer. Also derive emf equation.	**07**
	(b)	Explain Torque–Slip characteristics of three phase induction motor.	**07**
Q.4	**(a)**	State different methods for finding voltage regulation of alternator. Explain in brief any one of them.	**07**
	(b)	Give the difference between and working of permanent magnet stepper motor.	**07**
		OR	
Q.4	**(a)**	Explain double field revolving theory.	**07**
	(b)	Explain construction and working of Schrage motor.	**07**
Q.5	**(a)**	Explain in brief construction and working principle of universal motor.	**07**
	(b)	Explain the operating principle of synchronous motor. Draw the vector diagrams when the synchronous motor	**07**

runs at under excitation an over excitation.

OR

Q.5	**(a)**	Explain the difference between cylindrical and salient pole rotors used in large alternator. Define (1) pitch factor (2) Distribution factor (3) Form factor.	**07**
	(b)	Explain equivalent circuit of single phase transformer.	**07**

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