Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: X 50902 **Date: 06-12-2013**

Subject Name: Elements of Electrical Design

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)**	State and explain various methods for calculating MMF required for the teeth in d.c. machine.	**07**
	(b)	Derive the expression for the MMF required for the air gap in the case of slotted armatures.	**07**
Q.2	**(a)**	What is mean by magnetizing curve? Explain its importance and uses in magnetic circuit.	**07**
	(b)	What is the carter's fringing curve? Why it is used?	**07**
		OR	
	(b)	Explain necessity of Starter in D.C. Motor, and also write design steps For designing different section resistance in D.C. Shunt motor.	**07**
Q.3	**(a)**	Discuss the factors to be considered while designing for the domestic wiring.	**07**
	(b)	Design a suitable 8 section starter for a 14.92 KW, 250V, 1000rpm, d.c. shunt motor for the following data: Maximum torque= Full load torque Armature circuit resistance= 0.4 ohm Full load efficiency= 0.85	**07**
		OR	
Q.3	**(a)**	State the four fundamental equations used for the design of a plunger type electromagnet.	**07**
	(b)	What is welding transformer? Discuss the design procedure for the welding transformer.	**07**
Q.4	**(a)**	Discuss design procedure for core and windings of a small transformer.	**07**
	(b)	What is choke coil? State the function of chokes used in Tube –lights.	**07**
		OR	
Q.4	**(a)**	Discuss the design procedure of 3 phase choke coil.	**07**
	(b)	What do you mean by "dummy coil"? What are its applications? Also explain the use of equalizer connections in d.c. armature winding.	**07**
Q.5	**(a)**	Explain the classification of AC winding in brief.	**07**
	(b)	Define and clearly explain the terms : (1) Front pitch (2) Back pitch (3) Commutator pitch	**07**
		OR	
Q.5	**(a)**	Explain the importance of (a) current carrying capacity and (b) voltage drop while determining the size of conductor.	**07**
	(b)	What is electric load? Discuss briefly the different types of loads with examples.	**07**

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