Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II EXAMINATION – WINTER 2015

Subject Code: X21901 **Date:22/12/2015**

Subject Name: Electrical Machines and Electronics

Time: 02:30pm to 05:00pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain construction and working principle of 1-phase transformer.	**07**
	(b)	What is power factor? Explain the methods of power factor improvement.	**07**
Q.2	**(a)**	Compare d.c. generator with d.c. motor. Explain types of d.c. motors with diagram.	**07**
	(b)	Explain De-Morgan's theorem with equations and diagram.	**07**
Q.3	**(a)**	Explain construction and working principle of 3-phase induction motor. What are the types of 3-phase induction motor?	**07**
	(b)	An ideal 25 kVA transformer has 500 turns on primary winding and 40 turns on secondary winding. Primary is connected to 3000 V, 50 Hz supply. Calculate (i) Full load primary and secondary current (ii) Secondary induced emf (iii) Maximum flux in the core.	**07**
Q.4	**(a)**	What is a substation? Explain the classification of substation.	**07**
	(b)	Discuss AND, OR, NOT, NOR, NAND, EX-OR and EX-NOR logic gates with their truth tables.	**07**
Q.5	**(a)**	Explain centre tap type full wave rectifier with necessary circuit and waveforms.	**07**
	(b)	Define voltage regulation of an alternator. Explain any one method of voltage regulation.	**07**
Q.6	**(a)**	What is tariff? Explain the types of tariff.	**07**
	(b)	Explain the characteristics of d.c. motors.	**07**
Q.7	**(a)**	Compare AC and DC transmission system. Discuss the advantages of high transmission voltage.	**07**
	(b)	Write short note on (i) Capacitor start capacitor run motor (ii) 1-phase shaded pole motor.	**07**

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