Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC– SEMESTER II– • EXAMINATION –WINTER- 2016

Subject Code: X21901 **Date:02/01/2016**

Subject Name: Electrical Machines and Electronics

Time:02:30 PM to 5:00 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)**	What is tariff? Describe the various types of tariff.	**07**
	(b)	Describe the all parts of D.C Machine in details with neat diagram.	**07**
Q.2	**(a)**	Explain working principal of a transformer. Derive an E.M.F equation of single phase transformer.	**07**
	(b)	Give comparison between overhead and underground transmission system.	**07**
		OR	
	(b)	Explain working principle of 3-phase induction motor. Give comparison between squirrel-cage and slip-ring induction motor.	**07**
Q.3	**(a)**	Discuss external and internal characteristics of a dc (i) Series and (ii) Shunt generator.	**07**
	(b)	Explain capacitor start induction run and shaded pole single phase induction motor.	**07**
		OR	
Q.3	**(a)**	Discuss speed control methods of D.C Shunt Motor.	**07**
	(b)	Compare shell and core types of transformers. Discuss the use of breather, bushings and conservators in a transformer.	**07**
Q.4	**(a)**	What is the necessity of starter in D.C. motor? Explain three point starters.	**07**
	(b)	What is power factor? Explain the methods of power factor improvement.	**07**
		OR	
Q.4	**(a)**	Explain the pin diagram of 8085 micro-processor.	**07**
	(b)	Explain parallel condition for two alternators and procedure for operation of two alternators.	**07**
Q.5	**(a)**	Discuss the use of OPAM as (i) inverting, (ii) non-inverting, (iii) differential and (iv) comparator.	**07**
	(b)	Discuss AND, OR, NOT, NOR, NAND, EX-OR and EX-NOR logic gates with their truth tables.	**07**
		OR	
Q.5	**(a)**	Explain De-Morgan's theorem with equations and diagrams.	**07**
	(b)	Explain different types of equipments used in substation.	**07**

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