Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III EXAMINATION – WINTER 2015

Subject Code:131901 **Date:05/01/2015**

Subject Name: ELECTRICAL MACHINES AND ELECTRONIC

Time: 2:30pm to 5:00pm **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 main parts of d.c. generator. Also discuss working principle of d.c. generator.	**07**
	(b)	Explain construction and working principle of 3-phase induction motor.	**07**
Q.2	**(a)**	Explain the types of d.c. motor with diagram.	**07**
	(b)	Why 1-phase induction motor is not self start? Write types of 1-phase induction motor. Compare it with 3-phase induction motor.	**07**
		OR	
	(b)	Explain the methods of speed control of d.c. shunt and series motor.	**07**
Q.3	**(a)**	What is voltage regulation? Explain any one method of voltage regulation of alternator.	**07**
	(b)	A 4 pole, 3-phase, 50 Hz, stat connected induction motor has a full load slip of 4%. Calculate full load speed of the motor.	**07**
		OR	
Q.3	**(a)**	Explain construction and working principle of 1-phase transformer.	**07**
	(b)	Explain equivalent circuit of 1-phase transformer step by step.	**07**
Q.4	**(a)**	Compare AC transmission with DC transmission. Also write advantages of high transmission voltage.	**07**
	(b)	What is a tariff? Explain the types of tariff.	**07**
		OR	
Q.4	**(a)**	What is a power factor? Explain the methods of power factor improvement.	**07**
	(b)	A 3-phase, 5 kW induction motor has a power factor of 0.75 lagging. A bank of capacitors is connected in delta across the supply terminals and power factor raised to 0.9 lagging. Determine the kVAR rating of the capacitors connected in each phase.	**07**
Q.5	**(a)**	What is a substation? Explain classification of substations.	**07**
	(b)	Explain full wave rectifier circuit. Also compare it with half wave rectifier.	**07**
		OR	
Q.5	**(a)**	Explain AND, OR, NOT, NAND and NOR logic gates with truth table.	**07**
	(b)	Explain the architecture of 8085 microprocessor.	**07**

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