Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER 2013

Subject Code: 131901 **Date: 31-05-2013**

Subject Name: Electrical Machines & Electronics

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 External and Internal characteristics of D.C. shunt generator.	**07**
	(b)	Sketch and explain the torque-slip characteristics of a three phase induction motor.	**07**
Q.2	**(a)**	Why starters are used in d.c. shunt motors? Explain 3-point starter with neat diagram.	**07**
	(b)	A 25 KVA transformer has 500 turns on the primary and 50 turns on the secondary winding. The primary is connected to 3000 V, 50 Hz supply. Find the full load primary and secondary currents, the secondary e.m.f. and the maximum flux in the core. Neglect leakage drops and no load primary current.	**07**
		OR	
	(b)	A 4 pole , d.c. shunt generator with a shunt field resistance of 100 ohm and an armature resistance of 1 ohm has 378 wave connected conductors in its armature. The flux per pole is 0.02 wb. If a load resistance of 10 ohm is connected across the armature terminals and the generator is driven at 1000 r.p.m. Calculate the power absorbed by the load.	**07**
Q.3	**(a)**	Describe working principle of shaded pole type single phase induction motor with neat diagram.	**07**
	(b)	Explain (i) Transformer cooling (ii) Oil conservators (iii) Breather.	**07**
		OR	
Q.3	**(a)**	Explain the use of C.T. and P.T. for voltage, current and power measurement.	**07**
	(b)	Explain the construction features and working principle of single phase transformer.	**07**
Q.4	**(a)**	What is voltage regulation of an alternator? Explain Synchronous Impendence Method.	**07**
	(b)	Explain the features of 8085.	**07**
		OR	
Q.4	**(a)**	Explain (i) Three phase bridge rectifier. (ii) Multi stage amplifier.	**07**
	(b)	What do you mean by tariff? Explain different types of tariff.	**07**
Q.5	**(a)**	Explain merits and demerits of overhead system and underground system for electric supply. Also give the comparison for A.C. and D.C. transmission system.	**07**
	(b)	State various methods for power factor improvement. Explain power factor correction by static capacitors.	**07**
		OR	
Q.5	**(a)**	Explain half wave rectifier and full wave rectifier. Compare between them.	**07**
	(b)	Give the symbol Boolean expression and logical operation for the following logic gates. 1. NOT 2. AND 3. OR 4. NOR 5. NAND 6. Exclusive NOR 7. Exclusive OR	**07**

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