Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

P.D.D.C. Sem- II (E.C)Examination June 2010

Subject code: X21101 **Subject Name: Electrical Engineering**

Date: **Time:**

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 requirement of Starter? Explain working of three point starter.	07
	(b)	Explain different characteristics of DC shunt motor.	07
Q.2	**(a)**	What is Back E.M.F.? Explain significance of Back E.M.F.	07
	(b)	A 4-pole dc shunt generator with a wave-wound armature has to supply a load of 200A. Allowing 10 V for the voltage drop in the connecting leads between the generator and the load and drop of 1 V per brush. Calculate the speed at which the generator should be driven. The flux per pole is 30 mWb and the armature and shunt field resistance are respectively 0.05Ω and 65Ω. The number of armature conductors is 390.	07
		OR	
Q.2	**(a)**	Explain construction and working of DC generator.	07
	(b)	A 4-pole, 500 V shunt motor has 720 wave connected conductors in the armature. The field resistance is 250 Ω and line current is 40 A. The flux per pole is 0.03 Wb. The armature resistance is 0.2 Ω and the contact drop is 1 V per brush. Calculate the full load speed of the motor.	07
Q.3	**(a)**	Explain working principle of Single phase transformer. Also derive emf equation.	07
	(b)	Explain working of single phase transformer on " ON LOAD " condition.	07
		OR	
Q.3	**(a)**	Explain equivalent circuit of single phase transformer.	07
	(b)	A 200 KVA , 2000/440 V, 50 Hz single phase transformer gave the following test result: O.C test : 2000 V, 1.8 A, 1.75 kW on H.V side. S.C test : 13 V, 300 A, 1 kW on L.V.side	07
Q.4	**(a)**	Explain working principle of Three phase induction motor.	07
	(b)	Explain power stages of induction motor.	07
		OR	
Q.4	**(a)**	Explain Torque-Slip Characteristics of three phase induction motor.	07
	(b)	State method of starting of a three phase induction motor. Also describe any one method in brief.	07
Q.5	**(a)**	Explain why single phase induction motors are not self starting? How it becomes self starting?	07
	(b)	Explain Synchronous impedance method to find voltage regulation of an alternator.	07
		OR	
Q.5	**(a)**	Explain capacitor start capacitor run single phase induction motor	07

(b) Explain Ampere-Turn method to find voltage regulation of an alternator. 07