Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC Second Semester Examination (Electrical Engg)

Subject code: X20903

Subject Name: ELECTRICAL MACHINES I & II

Date: 18/6/2010 **Time: 2:30 to 5:00**

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 rotating magnetic field theory for three phase induction motor.	**07**
	(b)	Explain torque- slip characteristics of three phase induction motor.	**07**
Q.2	(a)	Derive the equation of torque under starting and running condition for induction motor.	**07**
	(b)	Explain the effect of voltage and frequency on the torque of induction motor ?	**07**
		OR	
	(b)	Explain why the induction motor is self starting. Also explain term 'slip'.	**07**
Q.3	(a)	Explain basic working principle of transformer. Derive its emf equation.	**07**
	(b)	What is difference between shell type and core type transformer with suitable diagram	**07**
		OR	
Q.3	(a)	Explain working of single phase transformer under no-load condition.	**07**
	(b)	What are different type of losses occur in transformer? Derive the condition of maximum efficiency.	**07**
Q.4	(a)	What is the regulation in transformer and significance of it for transformer at different power factor? Explain with suitable vector diagram.	**07**

	(b)	Draw the equivalent circuit of single phase transformer.	**07**

OR

Q. 4	(a)	Explain how voltage is build up in d.c. generator. Derive emf equation for d.c. generator.	**07**
	(b)	What is necessity of starter for d.c.motor. Explain three point starter.	**07**
Q.5	(a)	Derive the torque equation of d.c.motor.	**07**
	(b)	Explain different speed control method for d.c.motor.	**07**

OR

Q.5	(a)	Explain different method of measurement of slip of induction motor.	**07**
	(b)	Explain mmf method to find out regulation of synchronous generator.	**07**

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