Seat No.: _____ *Enrolment No.:_____*

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. Semester-IV Examination Summer-2015

Subject Code : 142401 **Date : 28/05/2015**
Subject Name : Electromechanical Energy Conversion – I
Time: 10.30am-01.00pm **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 Stroboscopic method for measurement of slip of 3-Φ induction motor.	**07**
	(b)	Derive the equation of the torque and the condition for maximum torque under running condition for 3-Φ induction motor.	**07**
Q.2	**(a)**	Explain the external characteristics of dc shunt generator.	**07**
	(b)	Explain various losses of the dc machine.	**07**
		OR	
	(b)	Explain various parts of the dc machine with neat sketch.	**07**
Q.3	**(a)**	Explain the significance of the back EMF in dc motor. Derive the equation of the armature torque of the dc motor	**07**
	(b)	Explain the characteristics of dc series motor.	**07**
		OR	
Q.3	**(a)**	Explain the Ward Leonard system for the speed control of dc shunt motor. List the advantages and disadvantages of it.	**07**
	(b)	Explain the Swinburne's test of dc motor.	**07**
Q.4	**(a)**	List the conditions for the parallel operation of 1-Φ transformers.	**06**
	(b)	Explain the elementary theory of an ideal transformer. Derive the EMF equation of the transformer.	**08**
		OR	
Q.4	**(a)**	Explain the open circuit test of 1-Φ transformer.	**06**
	(b)	Explain the Equivalent circuit of 1-Φ transformer.	**08**
Q.5	**(a)**	Explain the construction and working of the 3-Φ Schrage motor.	**07**
	(b)	Explain the ZPF method of determining the regulation of 3-Φ Alternator.	**07**
		OR	
Q.5	**(a)**	Explain the repulsion principle of 1-Φ repulsion motor.	**07**
	(b)	Explain the parallel operation of 3-Φ Alternator.	**07**

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