Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2131005 Date: 30-12-2014

Subject Name: Electrical Machines

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)**	Why induction motor is self started? Explain with rotating magnetic field.	**07**
	(b)	What is construction difference between slip-ring and squirrel cage induction motor? What are the merits of each?	**07**
Q.2	**(a)**	Derive EMF equitation of single phase transformer. Which parameters are responsible for variation in output voltage?	**07**
	(b)	Explain construction difference between core type and shell type transformer.	**07**
		OR	
	(b)	Explain scott connection in transformer.	**07**
Q.3	**(a)**	What are the different conditions for parallel operation of two transformers?	**07**
	(b)	Explain open circuit and short circuit test on single phase transformer.	**07**
		OR	
Q.3	**(a)**	Explain working of transformer under NO load condition with the help of vector diagram.	**07**
	(b)	Explain equivalent circuit of single phase transformer.	**07**
Q.4	**(a)**	What is slip in induction motor? Explain torque/slip characteristics of induction motor.	**07**
	(b)	Derive equitation of starting torque and running torque of induction motor.	**07**
		OR	
Q.4	**(a)**	What pitch factor and distribution factor in alternator?	**07**
	(b)	Explain ZPF method for finding regulation in alternator.	**07**
Q.5	**(a)**	What is need of starter in DC machine? Explain construction and working of three point starter.	**07**
	(b)	Explain different type of DC generator according to its field winding.	**07**
		OR	
Q.5	**(a)**	What is load factor, diversity factor and plant utilization factor?	**07**
	(b)	Explain three phase four wire and three phase three wire system. Explain merits of each.	**07**

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