Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: 150802 **Date: 01-12-2014**

Subject Name: Electrical Machine

Time: 10.30 am - 01.00 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)**	What is the armature reaction? Explain the effect of armature reaction on performance of D.C. Machine.	**07**
	(b)	Explain in brief about the techniques to improve the commutation in DC machine.	**07**
Q.2	**(a)**	Explain the Scott connection with vector diagram for 3-phase transformer.	**07**
	(b)	Explain the Swinburne test of DC machine with equation.	**07**
		OR	
	(b)	Write short note on Hopkinson test for determination of efficiency of a DC machine.	**07**
Q.3	**(a)**	Describe briefly the methods of controlling speed of a 3-phase Induction motor.	**07**
	(b)	Why single phase induction motor is not self starting? Explain Double field revolving theory of single phase induction motor.	**07**
		OR	
Q.3	**(a)**	State various methods of starting of a 3-phase induction motor. Explain with the help of diagram the working of a star – delta starter.	**07**
	(b)	Discuss construction, phasor diagram and torque-speed characteristics for the single phase capacitor start induction run motor.	**07**
Q.4	**(a)**	Explain No load & Blocked rotor test of 3-phase Induction motor.	**07**
	(b)	Write a short note on shaded pole induction motor.	**07**
		OR	
Q.4	**(a)**	Draw and explain Equivalent circuit of a 3-phase Induction motor.	**07**
	(b)	Discuss the construction, operation and speed control for the Universal Motor.	**07**
Q.5	**(a)**	Derive the equation of power developed by synchronous motor.	**07**
	(b)	Explain the construction and working of variable reluctance steeper motor.	**07**
		OR	
Q.5	**(a)**	Explain “V curve” and “invert V curve” of synchronous motor.	**07**
	(b)	Discuss construction and operation of permanent magnet brushless DC motor.	**07**

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