Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-Vth Examination December 2010

Subject code: 152404

Subject Name: Electromechanical Energy Conversion-II

Date: 18 /12 /2010 **Time: 03.00 pm - 05.30 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)**	Explain different types of capacitor start 1-Ø motors.	**07**
	(b)	Explain construction & working of shaded pole type single phase motor. Also enlist advantages & disadvantages.	**07**
Q.2	**(a)**	Explain V-V connection for 3- Ø transformer.	**07**
	(b)	A Δ- Δ bank consisting of three 20 KVA , 2300/230V transformers supplies a load of 40KVA. If one transformer is removed , find for the resulting V-V connections 1. KVA load carried by each transformer. 2. Percent of rated load carried by each transformer. 3. Total KVA rating of the V-V bank. 4. Ratio of the V-V bank to Δ- Δ bank transformer ratings. 5. Percent increase in load on each transformer when bank is converted into V-V bank.	**07**
		OR	
	(b)	Explain construction & working of universal motor.	**07**
Q.3	**(a)**	Explain the working principle of synchronous motor.	**07**
	(b)	Explain the working principle of induction motor.	**07**
		OR	
Q.3	**(a)**	Explain Scott connection of 3- Ø transformer.	**07**
	(b)	Explain speed control of 3- Ø induction motor.	**07**
Q.4	**(a)**	Explain properties of magnetic material.	**07**
	(b)	Explain blocked rotor test & No-Load test for 3- Ø induction motor.	**07**
		OR	
Q.4	**(a)**	Explain different types of magnetic materials.	**07**
	(b)	Explain working principle of permanent magnet brushless D.C. machine.	**07**
Q.5	**(a)**	A squirrel cage type induction motor when started by means of a star/delta starter takes 180 % of full load line current and develops 35% of full load torque at starting. Calculate starting & current in terms of full load values, if an auto transformer with 75% tapings were employed.	**07**
	(b)	Explain applications of permanent magnetic materials.	**07**
		OR	
Q.5	**(a)**	Draw & write construction & working of switched reluctance motor. Enlist the advantage & disadvantage. Also write application.	**07**
	(b)	Discuss the effect of excitation on armature current & power factor. Also construct V- characteristics for synchronous motor.	**07**

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