GUJARAT TECHNOLOGICAL UNIVERSITY
M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1724504

Date:10/07/2012

Subject Name: **Advanced Electrical Machines**

Time: 10:30 am – 13:00 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)**	Draw and explain the schematic diagram for the closed loop control of BLDC drives for position control.	**07**
	(b)	Explain the working principle of BLDC machine. Why BLDC motor is called DC motor.	**07**

Q.2	**(a)**	What are the reasons behind popularity of BLDC motors over DC motors for servo applications?	**07**
	(b)	Explain energy relationship in electromechanical system.	**07**

OR

	(b)	Find absolute and incremental inductance of the electromagnetic circuit of which, the associated flux linkage expression is as under:	**07**

$$\lambda= 0.05(1-e^{-0.2i})+0.03i$$

where i denotes circuit current.

Q.3	**(a)**	Explain various modes of operation of VR stepper motor.	**07**
	(b)	Explain torque angle characteristic of stepper motor.	**07**

OR

Q.3	**(a)**	Explain concept of micro stepping control of stepper motor.	**07**
	(b)	Explain in brief construction and working principle of hybrid stepper motor.	**07**

Q.4	**(a)**	Explain segregation method of efficiency evaluation technique.	**07**
	(b)	Illustrate direct saving and pay back analysis of energy efficient motor.	**07**

OR

Q.4	**(a)**	Discuss fault detection and diagnosis technique for transformer.	**07**
	(b)	Highlight the recent trends in condition monitoring.	**07**

Q.5	**(a)**	Compare linear induction machine with conventional induction machine. Discuss advantage and disadvantage of linear induction machine.	**07**
	(b)	Elaborate various applications of linear induction machine.	**07**

OR

Q.5	**(a)**	Explain electromechanical energy conversion in S.R.M.	**07**
	(b)	Explain asymmetric bridge converter for S.R.M.	**07**

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