Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER • 2014

Subject Code: 150901 **Date: 11-06-2014**

Subject Name: Electrical Machines - II

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)**	Draw the vector and winding diagram for the following 3-phase transformer connections Dd6, Dy1, Yz1,	**07**
	(b)	Draw and explain vector diagram and connection diagram of Scott used for converting 3-phase supply into two 1-phase supply using two 1-phase transformer	**07**
Q.2	**(a)**	State and explain the condition for parallel operation of 3-phase transformer.	**07**
	(b)	Explain the working of on load tap-changer.	**07**
		OR	
	(b)	120 KVA , 3-phase, 50 Hz , 6600/400-V transformer is delta connected on H.V. side and star connected on L.V. side. The resistance of HV winding is 4.5 ohm/phase and of LV winding is 0.04 ohm/phase. If its full load efficiency is 95% at 0.85 p.f. (lag) , Calculate (i) Iron losses & copper losses at full load. (ii) Efficiency of transformer at half load and 0.8 p.f. (lead)	**07**
Q.3	**(a)**	Draw and explain vector diagram, connection diagram and clock representation of Yz11 connection of 3-phase transformer..	**07**
	(b)	A 3-phase 6-pole,50 Hz , 400 V star connected induction motor has following test results. No-Load Test:- 400 V, 9 A, 1250 watts. Short-circuit Test:- 200 V, 50 A, 6930 watts. Determine the power scale using circle diagram	**07**
		OR	
Q.3	**(a)**	Explain how rotating magnetic field is produced in 3-phase induction motor.	**07**
	(b)	Explain crawling and cogging of an induction motor.	**07**
Q.4	**(a)**	Two transformers are connected in open delta and supply a balance 3-phase load of 240 KW at 400 volt and a power factor of 0.866, determine (1) The secondary line current, (2) The KVA load on each transformer, (3) The power delivered by the individual transformers.	**07**
	(b)	Explain the importance and construction of double cage squirrel cage Induction Motor.	**07**
		OR	
Q.4	**(a)**	Explain the double revolving field theory for a single-phase induction motor.	**07**
	(b)	Explain different methods of starting 1-phase induction motors.	**07**
Q.5	**(a)**	Write different starters used for 3 phase induction motor and explain any one of them	**07**
	(b)	Explain construction and working principle of Schrage motor.	**07**
		OR	
Q.5	**(a)**	Explain the construction and working of welding transformer.	**07**
	(b)	Explain the construction and working principle of universal motor.	**07**

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