Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 150901 **Date:15/12/2015**

Subject Name: Electrical Machine-II

Time: 10:30am to 1:00pm **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 with a neat diagram Sumpner test on 3-Φ transformer.	**07**
	(b)	Explain Crawling and Cogging in 3-Φ Induction motor.	**07**
Q.2	**(a)**	Draw the vector and winding diagram for the following 3-phase transformer connections star-delta(Yd1), Delta-star (Dy1), Delta-Delta(Dd6) and star-star(Yy6). Also give advantages and disadvantages of each with application.	**07**
	(b)	With neat phasor diagram and necessary equations explain and draw the equivalent circuit of a 3-Φ Induction motor.	**07**
		OR	
	(b)	Explain the construction and working of Schrage motor.	**07**
Q.3	**(a)**	State and explain the conditions necessary for satisfactory parallel operation of two 3-Φ transformer.	**07**
	(b)	A 100-kVA, 3-Φ , 50Hz 3,300/400-V transformer is delta connected on hv side and star-connected on then lv side. The resistance of the hv winding is 3.5Ω per phase and that of lv winding 0.02Ω per phase. Calculate the iron losses of the transformer at normal voltage and frequency if it's full-load efficiency be 95.8% at 0.8p.f.(lag).	**07**
		OR	
Q.3	**(a)**	State and explain the different methods of speed control of 3-Φ Induction motor	**07**
	(b)	Why a single phase induction motor are not self starting. Explain the double revolving field theory.	**07**
Q.4	**(a)**	Briefly describe the construction and working of repulsion motor.	**07**
	(b)	Explain the principle and working of induction generator. Also state it's application.	**07**
		OR	
Q.4	**(a)**	Write the steps to draw a circle diagram for a three phase induction motor. Also write the steps to find the max torque, efficiency for a given load from the circle diagram.	**07**
	(b)	Describe the working of double cage induction motor. Also draw and explain the equivalent circuit.	
Q.5	**(a)**	Define voltage regulation of a transformer. With a neat diagram explain the working of on-load tap-changer.	**07**
	(b)	Write a short note on capacitor start and capacitor run induction motor. State it's application.	**07**
		OR	
Q.5	**(a)**	Explain magnetic levitations and it's principle. Also state the advantages and application of linear induction motor.	**07**

(b) Explain welding transformer . Differentiate between welding transformer and power transformer. **07**

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