Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2012

Subject code: 150901 Date: 11-01-2013

Subject Name: Electrical Machine-II

Time: 02:30 pm to 05:00 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)	Explain the different phase group of power transformer using vector and winding diagram.	**07**
(b)	State the condition for parallel operation of transformer. Explain the Sumpner's test with necessary circuit diagram.	**07**
Q.2(a)	A 3-phase step-down transformer is connected to 6.6 KV mains and takes 10 A. calculate the secondary line voltage, line current for the following connections. The ratio of turns per phase is 12 Neglect losses. (1) Δ/ Δ (2) Y/Y (3) Δ/Y	**07**
(b)	Explain the principle and operation of Induction generator.	**07**
	OR	
(b)	Explain the on load and off load tap-changers of transformer.	**07**
Q.3 (a)	Explain the equivalent circuit of an Induction motor with necessary circuit diagram.	**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 the automatic Y/ Δ starter for 3-phase induction motor using power and control circuit.	**07**
(b)	State and explain any two method of speed control of Induction motor.	**07**
Q.4(a)	Explain principle, advantage and application of linear induction motor.	**07**
(b)	Explain the performance of induction motor against variation in supply voltage and frequency.	**07**
	OR	
Q.4 (a)	Explain cogging and crawling of induction motor.	**07**
(b)	Explain the principle and operation of 1-phase capacitor start and run motor.	**07**
Q.5 (a)	Explain why a single phase induction motor does not self start. Discuss its operation based on double revolving field theory.	**07**
(b)	Explain the construction and working principle of Shaded pole induction motor.	**07**
	OR	
Q.5 (a)	Explain the action of commutator as a frequency converter.	**07**
(b)	Explain the construction and working principle of Repulsion motor.	**07**

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