Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– III(OLD) EXAMINATION – SUMMER 2019

Subject Code: 131701   **Date: 11/06/2019**

Subject Name: Electrical Machines

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 different losses in transformer and derive the expression for condition for maximum efficiency of transformer.	**07**
	(b)	Explain the working principle of 1-phase transformer under no-load condition with vector diagram.	**07**
Q.2	**(a)**	What is cogging and crawling? Differentiate between slip ring induction motor and squirrel cage induction motor.	**07**
	(b)	An ideal 25KVA transformer has 500turns on the primary winding and 40turns on secondary winding. The primary is connected to 3000V, 50Hz supply. Calculate: 1.primary and secondary currents on full load 2. Secondary EMF 3.maximum core flux.	**07**

OR

	(b)	What is slip? Explain torque-slip characteristics of 3-phase induction motor.	**07**
Q.3	**(a)**	Explain the working principle, construction and applications of capacitor start capacitor run induction motor.	**07**
	(b)	Describe the construction and working of a double-cage induction motor.	**07**

OR

Q.3	**(a)**	List out starting methods of poly phase induction motor. Explain any one method in detail.	**07**
	(b)	Explain No-load and Blocked rotor test on three phase induction motor.	**07**
Q.4	**(a)**	Explain Swinburne's test of DC machine.	**07**
	(b)	Explain different type of DC generator according to its field winding.	**07**

OR

Q.4	**(a)**	Explain ZPF method for finding regulation in Alternator.	**07**
	(b)	Explain the operating principle of synchronous motor. And also explain why synchronous motor is not started?	**07**
Q.5	**(a)**	Explain hunting effect in synchronous motor.	**07**
	(b)	What is the elementary concept of rotating machines? Explain electromechanical conversion.	**07**

OR

Q.5	**(a)**	Define (i) Pitch factor. (ii) Distribution factor for alternator	**07**
	(b)	An 8 pole armature has 96 slots with 8 conductors per slot. It is driven at 600 RPM. The useful flux per pole is 10mwb. Calculate the induced emf in armature winding when it is: (1) lap connected (2) wave connected.	**07**

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