Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (OLD) EXAMINATION – WINTER 2018

Subject Code:130904 Date:05/12/2018

Subject Name:Electrical Machines-I

Time:10:30 AM TO 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)**	Explain construction of dc machine	**07**
	(b)	Explain torque-slip characteristics of three phase induction motor	**07**
Q.2	**(a)**	Explain the voltage build up process of dc shunt generator	**07**
	(b)	Derive armature torque and shaft torque equation of dc motor	**07**
		OR	
	(b)	State different methods of speed control of dc motor. Explain Ward leonard method	**07**
Q.3	**(a)**	Explain three point starter	**07**
	(b)	Explain working principle of three phase induction motor	**07**
		OR	
Q.3	**(a)**	Explain various methods of measurement of slip of three phase induction motor	**07**
	(b)	3-phase ,50-Hz ,8-pole , induction motor has full-load slip of 2%. The rotor resistance and stand still rotor-reactance per phase are 0.001 ohm and 0.005 ohm respectively. Find the ratio of the maximum to full - load torque and the speed at which the maximum torque occurs.	**07**
Q.4	**(a)**	Explain working principle of transformer at no load and loaded condition	**07**
	(b)	Explain autotransformer	**07**
		OR	
Q.4	**(a)**	Discuss the conditions for parallel operation of transformer	**07**
	(b)	Explain open circuit and short circuit test of transformer	**07**
Q.5	**(a)**	Explain distribution factor and pitch factor	**07**
	(b)	Explain synchronous impedance method to determine the voltage regulation of alternator	**07**
		OR	
Q.5	**(a)**	Discuss conditions of parallel operation of synchronous generator	**07**
	(b)	Explain MMF method to determine the voltage regulation of alternator	**07**

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