Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020

Subject Code:3150910   **Date:27/01/2021**
Subject Name:Electrical Machine- II
Time:10:30 AM TO 12:30 PM   **Total Marks: 56**
Instructions:
1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	(a)	What is slip? Explain torque-slip characteristics of an induction motor.	03
	(b)	Define pitch factor and distribution factor with respect to an alternator.	04
	(c)	Explain the procedure to construct the circle diagram of three-phase induction motor. Also, discuss how the losses, efficiency and slip of three-phase induction motor are calculated at full load condition using circle diagram.	07
Q.2	(a)	Explain cogging and crawling in case of three-phase induction motor.	03
	(b)	Discuss the procedure to perform no load and blocked rotor tests on a three-phase induction motor.	04
	(c)	List out the methods of speed control of three-phase Induction Motor. Explain any one in detail.	07
Q.3	(a)	Why synchronous motor is not self-starting? Describe in brief.	03
	(b)	Derive the maximum running torque condition in case of three-phase induction motor.	04
	(c)	Define voltage regulation of an alternator. List out the methods to find out the voltage regulation of the alternator. Explain any one in detail.	07
Q.4	(a)	Discuss working of Repulsion motor.	03
	(b)	Write a note on double cage induction motor.	04
	(c)	Mention different starters for three phase Induction motor and explain star-delta starter in detail.	07
Q.5	(a)	Explain the construction of a salient pole synchronous machine.	03
	(b)	What is synchronization in case of alternator? Explain two bright one dark lamp method of synchronization.	04
	(c)	Write a short note on auto synchronous motor.	07
Q.6	(a)	Briefly describe the construction and working of linear induction motor.	03
	(b)	Briefly explain V-curves of synchronous motor.	04
	(c)	Explain construction, working and applications of Permanent magnet brushless DC motor.	07
Q.7	(a)	How direct axis and quadrature axis reactance can be measured for salient pole machine?	03
	(b)	Explain the construction and working of universal motor.	04
	(c)	Mention the types of single-phase AC motors. Explain the construction and working of shaded pole single phase motor.	07
Q.8	(a)	Derive the emf equation of an alternator.	03
	(b)	Draw and explain the equivalent circuit of three-phase induction motor.	04
	(c)	Define and describe the effect of armature reaction in an alternator.	07

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