

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018

Subject Code:2140906

Date:01/12/2018

Subject Name:AC 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.

		MARKS
Q.1	(a) Explain working principle of Induction Generator.	03
	(b) Derive the EMF equation of an alternator.	04
	(c) Mention different starters for three phase induction motor and explain Auto- transformer starter in details.	07
Q.2	(a) Compare squirrel cage and slip ring Induction Motor.	03
	(b) Write a short note on auto synchronous motor.	04
	(c) Explain the phenomena of crawling and cogging in induction motor.	07
OR		
	(c) Explain the procedure to construct the circle diagram of induction motor. Also describe the method to determine losses, efficiency and slip at full load condition using circle diagram.	07
Q.3	(a) Derive the torque equation for 3phase Induction Motor.	03
	(b) List out the methods of speed control of Induction Motor. Explain any one in detail.	04
	(c) Define and describe the effect of Armature reaction in an alternator.	07
OR		
Q.3	(a) Explain with reason why synchronous motor is not self starting.	03
	(b) Discuss the methods of starting of synchronous motor.	04
	(c) Explain V-curves and its importance for synchronous motor.	07
Q.4	(a) Explain the determination of direct axis and quadrature axis synchronous reactance using slip test.	03
	(b) Explain the construction and working of universal motor.	04
	(c) List the methods of determination of voltage regulation of an alternator. Explain any one in detail.	07
OR		
Q.4	(a) State the conditions to be satisfied for putting a 3 phase alternator in parallel with infinite bus.	03
	(b) Briefly describe the construction and working of linear induction motor.	04
	(c) Explain any one method for starting of 3phase squirrel cage induction motor.	07
Q.5	(a) Define the pitch factor and distribution factor in case of synchronous motor.	03
	(b) Derive the condition for maximum starting torque for three phase induction motor.	04
	(c) Discuss the procedure to perform no load and blocked rotor tests on a three phase induction motor.	07

- Q.5** (a) What is hunting? How to minimize it? **03**
- (b) What is synchronization? Explain two bright one dark lamp method of Synchronization. **04**
- (c) What is the role of commutator in A.C. commutator motor? Explain working of Schrage Motor. **07**

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