Q. Code: 512702

B.E./B.TECH. Degree Examination, December 2020

Fifth Semester

EE18551- Marine Electrical Machines-II

(Regulation 2018)

Time: Three hours Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. A 10 pole AC generator rotates at 1200 rpm. The frequency of AC voltage in cycles per second will be
   A. 120
   B. 60
   C. 160
   D. 100
2. Synchronous motor can operate at
   A. Lagging power factor only
   B. Leading power factor only
   C. Unity power factor only
   D. Lagging, leading and unity power factor.
3. Slip ring induction motor has
   A. Low starting torque
   B. Medium starting torque
   C. High starting torque
   D. None of these
4. The method which can be used for the speed control of induction motor from stator side is
   A. V / f control
   B. Controlling number of stator poles to control Ns
   C. Adding rheostats in stator circuit
   D. All of these
5. Identify the reason for creeping in induction type energy meter and find a solution for that.
6. Enumerate the necessary conditions for parallel operation of alternators.
7. An induction motor never run at synchronous speed. Justify your answer.
8. Interpret how damper winding prevent hunting in synchronous motor.

PART B - (4 X16 = 64 marks)

09. (a) Demonstrate the Energy measurement by single phase watt-hour meter. **(16)**

(OR)

(b) (i) The LG fault occurred on an underground cable, What arrangement is used to detect fault location on the cable? **(8)**

(ii) Sketch the block diagram representation of Automatic control system and PID controller. **(8)**

10. (a) Discuss the effect of **(16)**

(1) Increasing excitation of one alternator;

(2) Increase fuel to the one of the alternators;

When two alternators are running in parallel.

(OR)

(b) A 3 Phase star connected, 1000KVA, 2000V, 50Hz alternator gave the following open circuit and short circuit test readings. The armature effective resistance per phase is 0.2 ohm. Draw the characteristics curves and determine the full load percentage regulation at 0.8 pf lagging and leading by EMF method. **(16)**

S.No	**Field current(A)**	**O.C Voltage**	**S.C. armature current**
1	10	800	--
2	20	1500	200
3	25	1760	250
4	30	2000	300
5	40	2350	--
6	50	2600	--

11. (a) Draw the phasor diagram of synchronous motor for lagging, Leading and Unity power factor. Describe the effect of changing excitation at constant load on synchronous motor. **(16)**

(OR)

(b) (i) Why synchronous Motor is not self starting? How the synchronous motor can be started? **(8)**

(ii) Compare the synchronous motor over other AC motor. **(8)**

12. (a) (i) Describe the speed control of an induction motor from rotor side. **(8)**

(ii) Enumerate the measures taken in electrical machines to overcome its failure. **(8)**

(OR)

(b) (i) What is the necessity of starter? Depict the star-delta starter and autotransformer starter? **(8)**

(ii) Derive the expression for the torque developed in an induction motor? Sketch the torque-slip characteristics of squirrel cage induction motor? **(8)**