Q. Code: 625296

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

Third Semester

EE18351- Marine Electrical Machines -I

(Regulation - 2018)

Time: Three hours Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. No-load speed of which of the following motor is highest?
   1. Differentially compound motor
   2. Cumulative compound motor
   3. Series Motor
   4. Shunt Motor
2. The function of conservator in a transformer is
   1. To protect against internal fault
   2. To reduce copper as well as core losses
   3. Cool the transformer oil
   4. Take care of the expansion and contraction of transformer oil due to variation of temperature of surroundings.
3. A pointer of an instrument once deflected returns to zero position, when the current is removed due to
   1. Action of gravity
   2. Mass of the pointer
   3. Controlling Torque
   4. Damping Torques
4. Sparking occurs when a load is switched off because the circuit has
   1. High inductance
   2. High capacitance
   3. High resistance
   4. High conductance
5. List the various losses occurring in DC machines.
6. Why transformers are rated in KVA?
7. Give the reason. Why MC Meters are not suitable for measuring AC quantity?
8. Differentiate Fuses and circuit breakers.

PART B - (4 X16 = 64 marks)

09. (a) (i) Derive the induced emf equation of DC Generator. **(6)**

    (ii) Draw the electrical circuit representation of DC Shunt, Series Generators and write the necessary equation related to them. **(10)**

(OR)

(b) Explain the armature reaction and its effects in D.C machine. How it can be minimized. **(16)**

10. (a) (i) Explain the methods of speed control suitable for series motor in detail **(8)**

(ii) A 4 pole, 500V DC shunt motor has 700 wave connected conductors on its armature. The full load armature currents is 60 A and flux per pole is 30mwb.Calculated the full load speed if the motor armature resistance is 0.2Ω and the brush drop is 1V per brush. **(8)**

(OR)

(b) Explain in detail the method of calculating the efficiency of a D.C machine by conducting Swine burn's test. **(16)**

11. (a) Explain the working of single phase transformer under different load power factors with phasor diagram **(16)**

(OR)

(b) (i) Deduce the approximate equivalent circuit of single phase transformer. **(8)**

(ii) A 220/440 V single phase transformer has the following test results. **(8)**

OC Test: 220V, 1A, 70W on low voltage side.

SC Test: 20V,20A, 100W on High voltage side

Obtain the equivalent circuit parameters of the transformer referred to LV side.

12. (a) (i) Explain the operation of MI instruments as ammeter. **(10)**

(ii) Write short notes on Fuses, Fuse element materials and properties. **(6)**

(OR)

(b) (i) Explain the different types of D.C distribution system in detail. **(8)**

(ii) Explain the operation of any one circuit breaker in detail. **(8)**