

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

Seventh Semester

MR16702- Marine Electrical Technology

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. Protection against sustained overloads occurring in molded-case circuit breakers is provided by a/an
 - A. Overvoltage release
 - B. Thermal acting trip
 - C. Thermal overload relay
 - D. Current overload relay
2. The number of cells in a 12 volt lead-acid battery is
 - A. Three cells
 - B. Four cells
 - C. Six cells
 - D. Twelve cells
3. Grounds occurring in electrical machinery as a result of insulation failure may result from.
 - A. Deterioration through extended use
 - B. Excessive heat
 - C. Extended periods of vibration
 - D. All of the above
4. In an AC synchronous motor electric propulsion plant, propeller speed is controlled by varying the.
 - A. Prime mover speed
 - B. Electric coupling field strength
 - C. Number of energized main motor poles
 - D. Propulsion generator field strength
5. Out at sea, if there is a black out during your watch, what action will take?
6. What is the meaning of preferential trip? Why is it provided?
7. State different types of Motor and voltages available on Ships.
8. How are emergency batteries maintained?

PART B - (4 X16 = 64 marks)

09. (a) (i) Show with a sketch how emergency generator and main generators are arranged. How does the emergency generator start on failure on main power? **(10)**
- (ii) Why only AC is used on board? **(6)**

(OR)

- (b) (i) Show the arrangement of shore supply connection and enumerate the precautions and requirements while consuming shore supply. **(10)**
- (ii) How to treat the person affected by electric shock? **(6)**
10. (a) (i) How to select CB and draw the cross sectional view of ACB? **(8)**
- (ii) Differentiate MCB and MCCB with respect to applications. **(8)**
- (OR)**
- (b) Enumerate the pros and cons of following electrical systems on ship **(16)**
- (i) Earthed neutral system
- (ii) Insulated neutral system
11. (a) (i) How does a tube light work? **(8)**
- (ii) Classify the insulating materials based on temperature. **(8)**
- (OR)**
- (b) (i) Can you discuss the typical requirements of fire detection system and show the navigation light schematic circuit used in ships? **(8)**
- (ii) What are the benefits of electric propulsion system and depict the synchronous motor based propulsion system? **(8)**
12. (a) (i) Draw the following battery characteristics **(6)**
- (i) Charging curve
- (ii) Discharging curve
- (iii) Battery Capacity Curve
- (ii) With necessary diagram, describe the Diesel Electric propulsion systems. **(10)**
- (OR)**
- (b) How to carry out the maintenance and troubleshooting of Alternator and Discuss the various types of maintenance followed in ships? **(16)**