Total number of printed pages – 4 **B. Tech**

CPMR 8305

Sixth Semester Examination – 2008

MARINE ELECTRICAL TECHNOLOGY

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2 ×10

   (a) What is the merits and demerits of AC and DC on board ?

   (b) Suggest three reasons why protection equipment is essential in an electrical distribution system.

   (c) Draw a single-phase, 3-wire and three-phase, 3-wire power distribution system.

   (d) What is a load test and its process of emergency generator ?

   (e) Which is a alternative source of power in a ship ? Give examples of its related loads.

   (f) A, 3-ϕ, 4 pole synchronous machine generates power at $50H_z$. What is the synchronous speed in rps ?

   (g) Which type of electrolyte used in Alkaline and lead-acid cells ? Why both are diluted with distilled water ?

   (h) Draw the different characteristics of D.C shunt motor.

   (i) Mention the types of zones, which recognised the degree of hazardness with examples in a ship.

   (j) Name four circuit breakers used in ship.

2. (a) Explain with a neat diagram of Brushless Generator construction, its main components and operations briefly. 8

(b) Draw the Blocks diagram of indirect excitation system and briefly discuss. 2

3. (a) What are the main types of emergency batteries used in ship ? Describe the construction of an lead-acid battery and also all the actions take place. 7

(b) What are the precautions while taking a shore supply ? 3

4. (a) Write various types of electrical diagrams. Draw the typical electrical system diagram in a ship and a block diagram of ship's electrical system. 7

(b) Write different types of marine switch-board and draw the lay-out of the main switch-board. 3

5. (a) Explain the various Navigation light indication and the signal used for a power driven ship under way (at night). 5

(b) What is Rudder angle indicator ? Explain the salvaging and a motor and necessary precaution and care while fault finding. 5

6. (a) What is propulsion system ? Explain Ward-Leonard propulsion system and Turbo-electric propulsion system with diagram. 7

(b) Write any six points on safety precautions for preventing from electric shock. 3

7. (a) What are various types of tankers ? Explain briefly. 3

(b) How ignition of a gas occur ? What are the possible electrical ignition sources in a ship ? Explain Ex 'd', Ex 'i', Ex 'e' and Ex 'n' equipments used in a ship. 7

8. (a) Draw the circuit diagram of a Thyristor based static AVR and explain the role of SCR and Zener diode in the list. 6

(b) Explain on grounded and insulated neutral system in a ship. 4

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