AUXILIARY EQUIPMENT PART I

Attempt ALL questions
Marks for each part question are shown in brackets

1. With reference to quick closing valves:

   (a) state where they would be fitted; (2)

   (b) explain how they operate should a fire occur in EACH of the following:

      (i) the machinery space; (4)

      (ii) close proximity to the valve. (4)

2. Describe, with the aid of sketch, a system for priming a centrifugal pump using a priming pump driven from the centrifugal pump. (10)

3. With reference to main air receivers:

   (a) list FOUR safety features, stating the purpose of EACH: (8)

   (b) state the relief valve operating pressure with reference to Maximum Operating Pressure and Maximum Design Pressure. (2)

4. With reference to hydraulic systems:

   (a) explain the term *fail safe;* (2)

   (b) describe EACH of the following components employed as fail safe devices:

      (i) rachets and pawls; (4)

      (ii) brake valve. (4)

5. (a) State the rudder movement required by SOLAS II-I, Reg 29. (5)

   (b) Explain how it is ensured that the maximum movement stated in part (a) is not exceeded in an electro-hydraulic, ram type steering gear. (2)

   (c) Explain how the steering gear system is protected from damage should the maximum movement be exceeded. (3)

6. (a) Sketch an arrangement for a transverse, water jet thruster. (6)

(b) Explain how thrust is created in a water jet thruster. (4)

7. Describe the checks carried out during the inspection of a main thrust bearing. (10)

8. With reference to fuse protection of electrical circuits:

(a) state the advantages of a High Rupture Capacity fuse; (3)

(b) explain how the advantages in part (a) are achieved; (2)

(c) explain why a fuse used for protection of a motor circuit differs from a fuse protecting a lighting circuit. (5)

9. Explain EACH of the following electrical terms:

(a) preferential tripping; (2)

(b) sequential starting; (2)

(c) fuse back up protection; (2)

(d) discrimination; (2)

(e) non-essential consumer. (2)

10. (a) State the units of kinematic viscosity applicable to hydraulic oil. (2)

(b) Explain the results of using an hydraulic oil having EACH of the following properties:

(i) too high a viscosity; (6)

(ii) too low a viscosity. (2)