AUXILIARY EQUIPMENT PART I

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

1. (a) State THREE reasons that may cause a relief valve to lift in service. (3)

   (b) State THREE reasons that may cause a relief valve to fail to lift should excessive pressure occur. (3)

   (c) Explain how the correct operation of a relief valve is ensured. (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 air compressors, explain EACH of the following:

   (a) why an air filter is important; (4)

   (b) why the compressor should not be allowed to run with a dirty air filter. (6)

4. With reference to a windlass that is hydraulically operated by a variable displacement motor, explain the effect of changing EACH of the following:

   (a) the flow rate of hydraulic oil; (4)

   (b) the displacement of the motor. (6)

5. With reference to a hydraulic steering gear, explain the purpose of EACH of the following:

   (a) shock valve; (3)

   (b) by-pass valve; (3)

   (c) pump isolating valve. (4)

6. Explain, with the aid of a sketch, the securing of a controllable pitch propeller to the tailshaft. (10)

7. Sketch a shaft coupling of the flexible diaphragm type, labelling the MAIN components. (10)

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

9. (a) State the factor that determines the minimum number of available generators required for a vessel to put to sea. (3)

(b) State SEVEN essential services for the operation of a vessel. (7)

10. (a) Explain the term *single phasing*. (2)

(b) State the effects on a motor of single phasing. (6)

(c) State how single phasing protection is achieved in the motor starter circuit. (2)