

AUXILIARY EQUIPMENT PART I

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

1. (a) Sketch a flexible diaphragm valve. (6)
(b) Describe how the diaphragm is replaced, stating the precautions that should be taken. (4)
2. (a) State THREE types of pumps used in hydraulic systems. (3)
(b) Sketch ONE of the pump types stated in part (a), describing the operation of the pump. (7)
3. Explain why EACH of the following may have fusible plugs fitted:
(a) air compressor; (5)
(b) air receiver. (5)
4. State, with reasons, FIVE properties necessary for hydraulic fluids. (10)
5. List ALL the necessary checks of the steering gear before a vessel leaves port. (10)
6. (a) State SIX advantages of controllable pitch propellers. (6)
(b) State FOUR disadvantages of controllable pitch propellers. (4)
7. Whilst a single screw vessel is on passage it is noticed that an intermediate shaft bearing is running hot.
(a) State FIVE possible causes. (5)
(b) Explain the procedure that should be followed in order to reach port for further investigation if there were no obvious causes. (5)
8. With reference to main propulsion shaft hydraulic sleeve type couplings:
(a) describe, with the aid of a sketch, the removal procedure; (7)
(b) state how it is determined, during reassembly, that the push fit is complete. (3)

9. (a) Explain the term *short circuit*. (2)
- (b) State the dangers for short circuit. (3)
- (c) State the device that is fitted to motor circuits to protect against short circuits. (2)
- (d) Explain how the device stated in part (c) operates. (3)
10. With reference to shore supplies:
- (a) state **THREE** necessary parameters that must be checked before connecting to the vessel's distribution system; (3)
- (b) explain the possible consequences of connecting an incorrect shore supply. (7)