

AUXILIARY EQUIPMENT PART 1

Attempt ALL questions

Marks for each part question are shown in brackets

1. (a) State, with reasons, the type of valve that should be fitted to EACH of the following:
 - (i) main engine lubricating oil pump delivery; (2)
 - (ii) fuel service tank outlet; (2)
 - (iii) Ballast tank. (2)
- (b) State the information required to correctly order a replacement valve. (4)

2. Describe, with the aid of a sketch, the operation of a gear pump. (10)

3. Explain the hazards of unauthorised repairs to compressed air lines. (10)

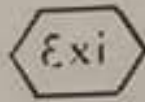
4. With reference to using air as a pneumatic medium:
 - (a) state FOUR advantages; (4)
 - (b) state, with reasons, THREE disadvantages. (6)

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. With reference to controllable pitch propellers:
 - (a) explain why they should maintain a small amount of pitch when in the neutral position; (1)
 - (b) state, with reasons, the failsafe position; (1)
 - (c) explain how pitch may be restored should hydraulic system failure occur. (1)

7. With reference to main propulsion shaft hydraulic sleeve type couplings:
- (a) describe, with the aid of a sketch, the removal procedure;
 - (b) state how it is determined, during reassembly, that the push fit is complete.
8. With reference to comparing modern water lubricated stern tube bearings with those that are oil lubricated:
- (a) state THREE advantages;
 - (b) state THREE disadvantages, explaining how EACH may be overcome.

9. (a) Explain the meaning of the symbol



- (b) Explain the term *flameproof enclosure*.
10. (a) State the factor that determines the minimum number of available generators required for a vessel to put to sea.
- (b) State SEVEN essential services for the operation of a vessel.