

AUXILIARY EQUIPMENT PART I

Attempt ALL questions

Marks for each part question are shown in brackets

1. ✓ With reference to butterfly valves:
- (a) ✓ describe their construction; (5)
- (b) ✓ state the advantages and disadvantages when compared to a gate valve. (5)
2. (a) ✓ Explain how cavitation damage occurs within a pump. (6)
- (b) ✓ State, with reasons, TWO operational causes of increased cavitation within a pump. (4)
3. (a) ✓ Explain the circumstances under which EACH of the following devices fitted to an air compressor may operate;
- (i) ✓ fusible plug; (4)
- (ii) ✓ bursting disc. (4)
- (b) ✓ State where EACH device in part (a) may be fitted. (2)
- Don't think I got this.
4. With reference to air compressors and pneumatic control systems:
- (a) ✓ state ONE advantage and ONE disadvantage of a compressed air system compared to a hydraulic system; (2)
- (b) ✓ explain why it is desirable to remove moisture from the air; (2)
- (c) ✓ explain why its desirable to limit oil carry over; (2)
- (d) ✓ describe how EACH of the following is achieved:
- (i) ✓ removal of moisture from the air; (2)
- (ii) ✓ limiting of oil carry over. (2)
5. Sketch a valve operated, rotary vane steering gear, showing the hydraulic system from the directional valve to the rotary vane unit. (10)
NOT Good sketch

6. ✓ With reference to propellers, explain EACH of the following:
- ✱ (a) ✓ TWO reasons for having high skew; - don't answer well! (5)
 - (b) ✓ TWO reasons for having aft rake. (5)
7. With reference to main propulsion shaft hydraulic sleeve type couplings:
- (a) ✓ describe, with the aid of a sketch, the tightening procedure; (7)
 - (b) ✓ state how it is determined that the push fit is complete. (3)
- Not answered well
8. (a) ✓ Explain, with the aid of sketches, how a new motor is aligned with an existing pump. (7)
- (b) ✓ State THREE checks which should be made before using the pump after the motor has been aligned. (3)
9. With reference to electrical generation and distribution systems, explain EACH of the following:
- (a) ✓ why an insulated neutral is preferred to an earthed neutral; (4)
 - (b) ✓ how essential circuits are protected should main switchboard overload occur. (6)
- Pref trips.
10. ✓ Describe the construction of a three phase induction motor of the caged rotor type. (10)