

CERTIFICATES OF COMPETENCY FOR ENGINEERS (YACHT)

EXAMINATIONS ADMINISTERED BY THE
SCOTTISH QUALIFICATIONS AUTHORITY
ON BEHALF OF
MARITIME AND COASTGUARD AGENCY

SMALL VESSEL SECOND ENGINEER

060-03 - AUXILIARY EQUIPMENT PART I

FRIDAY, 02 November 2018

1400-1600 hrs

Examination paper inserts:

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Notes for the guidance of candidates:

1. Non-programmable calculators may be used. 2. All formulae used must be stated and the method of working and ALL intermediate steps must be made clear in the answer.
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Materials to be supplied by examination centres:

Candidate's examination workbook

AUXILIARY EQUIPMENT PART I

Attempt ALL questions

Marks for each part question are shown in brackets

1.
 - (a) State the purpose of fitting isolating valves in a ring fire main. (2)
 - (b) State the type of valve that should be fitted for isolating sections of a ring fire main. (2)
 - (c) Explain why the type of valve stated in part (b) is used. (3)
 - (d) State how it is ensured that the isolating valve will operate when required. (1)
 - (e) State the position of the machinery space isolating valve. (2)

2.
 - (a) Sketch a vane type pump, labelling ALL components. (6)
 - (b) Explain the operation of the pump sketched in part (a). (4)

3. With reference to compressed air systems used for starting air and control purposes:
 - (a) state the pressure used for starting air; (1)
 - (b) explain why the pressure stated in part (a) is necessary; (3)
 - (c) state the pressure used for control air; (1)
 - (d) explain why the pressure stated in part (c) is different to that stated in part (a); (3)
 - (e) explain why the pressure stated in part (c) is greater than that necessary to operate the control equipment. (2)

4. With reference to pneumatic control systems, explain EACH of the following:
 - (a) why moisture is undesirable; (4)
 - (b) why oil is generally undesirable; (3)
 - (c) why oil may be intentionally introduced into parts of the system. (3)

5. Describe, with the aid of a sketch, the operation of a Hydraulic Telemotor system. (10)

6. With reference to controllable pitch propellers:
- (a) describe a mechanism that changes the pitch of the blades; (7)
 - (b) explain how the pitch of the blades is indicated. (3)
7. 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)
8. With reference to comparing modern water lubricated stern tube bearings with those that are oil lubricated:
- (a) state THREE advantages; (3)
 - (b) state THREE disadvantages, explaining how EACH may be overcome. (7)
9. (a) Compare the effects of earth leakage occurring in an earthed distribution system and in an insulated distribution system. (6)
- (b) State the reasons why an instrument type earth leakage detector will be fitted in preference to simple earth lamps. (4)
10. Describe the routine maintenance that should be carried out on the electrical side of an a.c. generator set. (10)