

**CERTIFICATE OF COMPETENCY EXAMINATION**

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

**060-03 - AUXILIARY EQUIPMENT PART I**

**FRIDAY, 03 May 2024**

**1400-1600 hrs**

Examination paper inserts:

Notes for the guidance of candidates:

1. Candidates should note that 100 marks are allocated to this paper. To pass candidates must achieve 50 marks.
2. Non-programmable calculators may be used
3. All formulae used must be stated and the method of working and ALL intermediate steps must be made clear in the answer.

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) Sketch a globe type screw lift valve suitable for sea water service. 10 (7) 7  
 (b) State, with reasons, the materials used for the valve sketched in part (a). 8 (3) 2 (9)
  
2. (a) Explain how cavitation damage occurs within a pump. 5 (6) 3  
 (b) State, with reasons, TWO operational causes of increased cavitation within a pump. 4 (4) 2 (5)
  
3. Explain why EACH of the following may have fusible plugs fitted:
  - (a) air compressor; 10 (5) 4 8
  - (b) air receiver. (5) 4 8
  
4. With reference to hydraulic systems: 8
  - (a) state THREE possible contaminations; (3) 2
  - (b) state possible causes of the contaminations stated in part (a). (6) (3) 2 (6)
  - (c) explain how the contaminants stated in part (a) are prevented from affecting the system. (4) 2
  
5. Sketch a 2-ram type steering gear including the hydraulic circuit, labelling ALL components. 5 (10) 7 (10)
  
6. With reference to propellers, explain EACH of the following terms:
  - (a) skew; (2)
  - (b) rake; (2)
  - (c) pitch; 8 (2) (10)
  - (d) slip. (4)

7. With reference to main propulsion shaft hydraulic sleeve type couplings:

- ✓ (a) describe, with the aid of a sketch, the tightening procedure;
- ✓ (b) state how it is determined that the push fit is complete.

(4) (7)  
(2) (3) (6)

8. (a) ✓ Explain, with the aid of sketches, how a new motor is aligned with an existing pump.

(7) (3) (5)

(b) ✓ State THREE checks which should be made before using the pump after the motor has been aligned.

(3) (2)

9. Explain EACH of the following electrical terms:

(a) preferential tripping;

(2) 1

(b) sequential starting; ✓

(2)

(c) fuse back up protection; ✓

(2)

(d) discrimination; ✓

(2)

(e) non-essential consumer. ✓

(2)

10. List TEN routine maintenance checks that should be carried out on a vented type lead acid engine starting battery system.

(10)

