

# **CERTIFICATES OF COMPETENCY FOR ENGINEERS (YACHT)**

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

**SMALL VESSEL SECOND ENGINEER**

**060-02 - OPERATIONAL PROCEDURES, BASIC HOTEL SERVICES AND SHIP CONSTRUCTION**

**FRIDAY, 29 January 2021**

**1400-1600 hrs**

Examination paper inserts:

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Notes for the guidance of candidates:

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| <ol style="list-style-type: none"><li>1. Candidates should note that 100 marks are allocated to this paper. To pass candidates must achieve 50 marks.</li><li>2. Non-programmable calculators may be used</li><li>3. All formulae used must be stated and the method of working and ALL intermediate steps must be made clear in the answer.</li></ol> |
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Materials to be supplied by examination centres:

Candidate's examination workbook
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## OPERATIONAL PROCEDURES, BASIC HOTEL SERVICES AND SHIP CONSTRUCTION

Attempt ALL questions

Marks for each part question are shown in brackets

1. Outline the FOUR duties of workers as laid down in the Code of Safe Working Practices for Merchant Seamen. (10)
  
2. With reference to the engine log books, explain the reasons for recording EACH of the following, and the effect on the engine should the temperatures be outside the normal parameters:
  - (a) exhaust temperatures; (3)
  - (b) cooling water inlet/outlet temperature; (3)
  - (c) lubricating oil temperature. (4)
  
3.
  - (a) State the purpose of a planned maintenance system. (4)
  - (b) State THREE parameters on which planned maintenance may be based. (3)
  - (c) State how an approved planned maintenance system can influence classification society requirements. (3)
  
4. With reference to the international agreement governing the discharge of oil from ships:
  - (a) state the name of the International Authority responsible for overseeing the legislation; (1)
  - (b) state the name of the appropriate regulation; (1)
  - (c) state what the abbreviation SOPEP stands for; (2)
  - (d) explain the purpose of a SOPEP; (2)
  - (e) list FOUR items of information a SOPEP should contain. (4)

5. (a) State the MARPOL Annex number which deals with the disposal of sewage. (1)
- (b) With reference to the Annex stated in part (a), state the rules for EACH of the following:
- (i) when the sewage is untreated; (2)
- (ii) when the sewage is comminuted and disinfected. (2)
- (c) Explain why the final discharge from an approved sewage treatment plant is chlorinated before discharge. (2)
- (d) Explain how chlorination is carried out and monitored. (2)
- (e) State the correct chlorine content of the final discharge. (1)
6. (a) Sketch a vapour compression refrigeration system, labelling the main components. (5)
- (b) Indicate the refrigerant conditions at the salient points on the sketch in part(a). (5)
7. With reference to water treatment:
- (a) state the treatment required for fresh water taken on from ashore; (2)
- (b) state FOUR properties required for water used for domestic purposes, describing how this may be achieved in EACH case. (8)
8. Explain EACH of the following types of motion:
- (a) roll; (2)
- (b) pitch; (2)
- (c) yaw; (2)
- (d) surge; (2)
- (e) heave. (2)

9. (a) Define EACH of the following:
- (i) Flash Point; (2)
  - (ii) Ignition Point (2)
  - (iii) Auto Ignition Temperature. (2)
- (b) Explain the requirements for the discharge of CO<sub>2</sub> of a machinery space fixed firefighting installation with regard to volume and time. (4)
10. (a) State the meaning of EACH of the following terms in relation to a vessel's size:
- (i) gross tonnage; (2)
  - (ii) net tonnage; (1)
  - (iii) lightweight; (2)
  - (iv) deadweight; (2)
  - (v) displacement. (2)
- (b) State the relationship between Lightweight, Deadweight and Displacement. (1)