

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, 30 April 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">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 used3. 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:

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| 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. Explain EACH of the following:
 - (a) Merchant Shipping Notices; (4)
 - (b) Marine Guidance Notes; (3)
 - (c) Marine Information Notes. (3)

2. List TEN common log entries, excluding machinery temperatures, pressures and other parameters. (10)

3.
 - (a) State THREE advantages of using condition monitoring as part of a planned maintenance system. (3)
 - (b) State THREE examples of criteria that could be used as a basis for condition based maintenance. (3)
 - (c) State FOUR reasons for keeping records of operating criteria and planned maintenance carried out. (4)

4. With reference to Annex 1 of the MARPOL convention, state EACH of the following:
 - (a) the appropriate system to be fitted on a vessel 400GRT or above; (4)
 - (b) the documentation required, explaining why it is required; (2)
 - (c) the information to be recorded when pumping bilges overboard through an oil water separator. (4)

5. List FIVE precautions to be observed before taking on bunkers, stating a reason for EACH precaution. (10)

6.
 - (a) State the THREE main stages of a Biological Sewage Treatment Plant. (3)
 - (b) Describe the operation of a Biological Sewage Treatment Plant, explaining the process carried out in EACH of the stages stated in part (a). (7)

7. (a) State THREE functions of air conditioning. (3)
- (b) With reference to air conditioning, explain EACH of the following:
- (i) absolute humidity; (2)
 - (ii) relative humidity; (2)
 - (iii) dew point. (3)
8. Describe, with the aid of a sketch, the construction of a spirally wound membrane suitable for use in a Reverse Osmosis water making plant, identifying ALL component parts. (10)
9. Describe, with the aid of a sketch, the construction and operation of a *thermistor* type rate of rise heat detector. (10)
10. With reference to a vessel's structure, explain the meaning of EACH of the following terms:
- (a) beam; (2)
 - (b) frame; (2)
 - (c) girder; (2)
 - (d) beam knee; (2)
 - (e) stringer. (2)