

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, 11 September 2020

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:

Candidate's examination workbook

OPERATIONAL PROCEDURES, BASIC HOTEL SERVICES AND SHIP CONSTRUCTION

Attempt ALL questions

Marks for each part question are shown in brackets

1. With reference to the SOLAS requirements for conducting regular emergency musters and drills:
 - (a) state the accepted emergency signal for calling crew and passengers to lifeboat muster stations; (2)
 - (b) state when emergency drills must be carried out; (4)
 - (c) list FOUR types of emergency drill that must be conducted on a regular basis. (4)

2.
 - (a) State, with reasons, where the watch should be handed over on a vessel fitted with a UMS system, where the period of duty is 24 hours. (2)
 - (b) Outline the responsibility of the duty engineer with respect to EACH of the following:
 - (i) the Systems Status Board; (3)
 - (ii) the Oil Record Book; (3)
 - (iii) the main and auxiliary Machinery Maintenance Record Book. (2)

3. With reference to the use of Oily Water Bilge Separators, explain the meaning of EACH of the following terms:
 - (a) turbulent flow; (2)
 - (b) emulsion; (2)
 - (c) maximum flow rate; (2)
 - (d) coalescence; (2)
 - (e) interface. (2)

4. With reference to the safe bunkering of marine gas oil fuel:
 - (a) list SIX actions that should be taken prior to and during the loading; (6)
 - (b) state FOUR tests to be carried out on the fuel to ensure that it is uncontaminated. (4)

5. (a) State the IMO regulations for the disposal of sewage. (4)
- (b) With reference to aerobic sewage treatment plants, explain EACH of the following:
- (i) why air is bubbled through the effluent in the aeration tank; (2)
- (ii) why care must be taken over the choice of toilet cleansers used; (2)
- (iii) why calcium hypochlorite is added to the treated sewage before discharge overboard. (2)
6. With reference to refrigeration plant;
- (a) state THREE indications of a loss in refrigerant charge; (3)
- (b) state THREE methods of detecting the location of the source of leakage; (3)
- (c) describe a safe method of bringing the gas charge back to its normal working level. (4)
7. Explain, with the aid of sketches, the principles of reverse osmosis as a method of producing fresh water. (10)
8. Describe, with the aid of a sketch, an active tank stabilisation system. (10)
9. List the important operations that should be included when organising fire drills. (10)
10. With reference to the construction of a vessel, state the meaning of EACH of the following terms:
- (a) sheer; (2)
- (b) freeboard; (2)
- (c) moulded depth; (2)
- (d) moulded draft; (2)
- (e) flare. (2)