

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, 06 November 2020

1400-1600 hrs

Examination paper inserts:

--

Notes for the guidance of candidates:

- | |
|--|
| <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. |
|--|

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. State the action to be taken by the watch keeping engineer in the event of EACH of the following:
 - (a) flooding; (6)
 - (b) failure of main propulsion machinery. (4)

2. State the purpose of infra red photography, explaining where it could be used as part of a condition monitoring programme. (10)

3. With reference to MARPOL Annex V:
 - (a) list the THREE recognised complimentary garbage handling techniques; (3)
 - (b) describe the basic requirements of a Garbage Management Plan; (5)
 - (c) define what is meant by *E-Waste*. (2)

4. With reference to marine diesel oil:
 - (a) define EACH of the following terms, stating the unit used in EACH:
 - (i) density; (2)
 - (ii) viscosity; (2)
 - (iii) flash point. (2)
 - (b) excluding the THREE terms listed in part (a), state FOUR items of information contained on a Bunker delivery note. (4)

5. With reference to sewage treatment plants:
 - (a) explain the difference between *black water* and *grey water*; (2)
 - (b) explain the difference between aerobic and anaerobic micro organisms; (3)
 - (c) list THREE dangerous gases produced under anaerobic conditions; (3)
 - (d) explain the dangers of producing the gases listed in part(c) in a confined space. (2)

6. (a) With reference to food storage rooms:
- (i) state, with reasons, the possible danger present in a room used for storing vegetables and fruit; (2)
 - (ii) state the devices necessary to prevent a person from becoming trapped in a storage room. (3)
- (b) State FOUR methods of detecting a refrigeration gas leak. (4)
- (c) State the name of the international agreement which stipulates that the production and consumption of compounds that deplete ozone in the stratosphere is phased out. (1)
7. With reference to reverse osmosis plants:
- (a) explain the treatment that the feedwater undergoes to prevent blockage of the membranes; (3)
 - (b) describe how the purity of the water is measured and protected, stating the limits on purity set by the World Health Organisation; (5)
 - (c) outline the further treatment the permeated water undergoes before it can be used for domestic purpose. (2)
8. Explain, with the aid of a sketch, the hydrodynamic operation of an *Active Fin Stabilizer*. (10)
9. Define EACH of the following, stating an example in EACH case where a fire could be caused:
- (a) spontaneous combustion; (4)
 - (b) flash point; (3)
 - (c) auto ignition temperature. (3)
10. (a) With reference to ship construction, define a bulkhead. (2)
- (b) State the functions of bulkheads. (8)