

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

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

**SMALL VESSEL CHIEF ENGINEER UNLIMITED  
SMALL VESSEL CHIEF ENGINEER LIMITED**

**059-01 - CHIEF ENGINEER STATUTORY AND OPERATIONAL REQUIREMENTS**

**FRIDAY, 10 September 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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## CHIEF ENGINEER STATUTORY AND OPERATIONAL REQUIREMENTS

Attempt ALL questions

Marks for each part question are shown in brackets

1. With reference to the International Maritime Organisation (IMO):
  - (a) state the THREE main categories of IMO Conventions; (3)
  - (b) state how IMO Conventions are enforced; (2)
  - (c) state the aim of the IMO Member State Audit Scheme (IMSAS). (5)
  
2. With reference to the International Convention for the Safety of Life at Sea (SOLAS 1974, as amended) Chapter XI section 2 - the *International Ship and Port Security Code*:
  - (a) list the FIVE basic requirements for ships in order to comply with the code; (5)
  - (b) list the basic procedures that will be required to be put in place in order for the vessel to operate at security level one. (5)
  
3. With reference to MARPOL Annex V (Prevention of Pollution by Garbage from Ships):
  - (a) state which vessels require a Garbage Record Book (GRB); (1)
  - (b) state the FOUR operations which require an entry in the GRB; (4)
  - (c) list the FIVE pieces of specific information required to be entered when an operation stated in part (b) is carried out. (5)
  
4. The UMS monitoring and control system of a ship has recently started to give false alarms and incorrect data printouts.
  - (a) State, with reasons, the possible causes. (5)
  - (b) State, with reasons, the action that should be taken to ensure continued safe operation of the vessel. (5)
  
5. The Code of Safe Working Practice for Merchant Seafarers states that *Permits to Work* must be obtained before certain tasks can be undertaken.
  - (a) List the conditions to be met before a *Permit to Work* is issued. (4)
  - (b) State FOUR points that would be listed as part of a *Permit to Work* for a typical task within the machinery spaces of a vessel. (4)
  - (c) State the time period over which a *Permit to Work* remains in force, outside of workshop areas. (2)

6. Explain the procedures carried out by a Classification Society for a new vessel to be built to class rules, and the class certificate being issued. (10)
7. With reference to condition monitoring:
- (a) explain how vibration analysis can be used as part of a planned maintenance system; (7)
  - (b) list SIX tests that can be carried out on crankcase oil in order to determine its suitability for further service. (3)
8. With reference to vessel's survey requirements:
- (a) state the possible consequences of either failing to obtain, or failing to renew a Statutory Certificate; (5)
  - (b) state what is meant by the *Harmonisation system of survey and certification*. (5)
9. A vessel has bunkered 300 tonnes of diesel fuel. Given that the average combined sea power load of the vessel is 3000 kW and with a stated specific consumption of 0.35 kg/kWh, calculate EACH of the following:
- (a) the daily fuel consumption of the vessel; (4)
  - (b) the safe steaming range of the vessel at a speed of 18 knots. (6)
10. Describe, with the aid of sketches, the difference between an obscuration type smoke detector and a light scatter type smoke detector. (10)