

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, 13 November 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

CHIEF ENGINEER STATUTORY AND OPERATIONAL REQUIREMENTS

Attempt ALL questions

Marks for each part question are shown in brackets

1. With reference to the International Convention for the Safety of Life at Sea (SOLAS), state the requirements for the routine testing of steering gears:
 - (a) prior to sailing from port; (5)
 - (b) at three monthly intervals while the vessel is proceeding on passage. (5)

2. Outline the engineering watchkeeping requirements, as stated in the STCW Convention, under EACH of the following conditions:
 - (a) restricted visibility; (3)
 - (b) coastal or congested waters; (3)
 - (c) ship at anchor in open roadstead or similar *at sea* condition. (4)

3.
 - (a) Explain, with the aid of a sketch, what is meant by the term *Reserve Buoyancy*, stating why it is important. (4)
 - (b) Explain what is meant by *Free Surface Effect*, stating how this can be minimised. (6)

4. With reference to the regulations regarding watchkeeping procedures:
 - (a) state the off-duty time to which a watchkeeper is legally entitled:
 - (i) in any twenty-four hour period; (3)
 - (ii) accumulatively over the period of one week; (1)
 - (b) list SIX circumstances under which it may be necessary to increase the watchkeeping manning of the machinery spaces. (6)

5. The Code of Safe Working Practice for Merchant Seafarers states that a *Permit to Work* must be obtained before certain tasks can be undertaken
 - (a) State the purposes of a *Permit to Work*. (4)
 - (b) List SIX items that need to be included on a *Permit to Work*. (6)

6. With reference to the ongoing machinery maintenance of a vessel:
- (a) state FOUR reasons why reliance on breakdown maintenance is generally considered unacceptable; (4)
 - (b) list THREE examples of condition monitoring, stating the benefits of using condition monitoring as part of a planned maintenance system. (6)
7. With reference to Classification Society surveys, describe the purpose of EACH of the following:
- (a) Annual Surveys; (3)
 - (b) Docking Surveys; (3)
 - (c) Special Surveys. (4)
8. With reference to the periodical dry-docking of a vessel:
- (a) list FIVE precautions that should be undertaken before the vessel enters the dock; (5)
 - (b) list FIVE inspections/precautions that should be undertaken before re-flooding the dock. (5)
9. (a) A vessel has two main engines each with a working sump lubricating oil capacity of 750 litres and an average daily consumption each of 3.5 litres at full power.
- Calculate the safe reserve lubricating oil requirements for a voyage of 2500 miles at a speed of 18 knots. (6)
- (b) State TWO factors that will need to be taken into consideration when calculating the fresh water requirements for an extended voyage. (4)
10. With reference to watertight bulkheads:
- (a) state FOUR reasons why these are an important part of the vessel's structure; (4)
 - (b) state the precautions that are necessary to avoid accidents with power operated watertight doors. (6)