

CERTIFICATES OF COMPETENCY FOR ENGINEERS (YACHT)

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

**STCW 95 CHIEF ENGINEER (REG. III/2) – “YACHT 2”
STCW 95 CHIEF ENGINEER (REG. III/2) – “YACHT 3”**

051-02 STATUTORY AND OPERATIONAL REQUIREMENTS

FRIDAY, 14 NOVEMBER 2008

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. Non-programmable calculators may be used.2. 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

STATUTORY AND OPERATIONAL REQUIREMENTS

Attempt ALL questions

Marks for each question are shown in brackets

1. With reference to the United Kingdom regulations regarding machinery watchkeeping procedures:
 - (a) state the off-duty time to which a watchkeeper is legally entitled:
 - (i) in any twenty-four hour period; (3)
6hrs continuous rest with a total 10 hrs in 24.
 - (ii) accumulatively over the period of one week; (1)
77 hrs cumulative in 1 week
 - (b) list SIX circumstances under which it may be necessary to increase the watchkeeping manning of the machinery spaces. (6)
Entering/Leaving Port, Near Coastal cruising, Bad weather, failure of Bilge Alarms, Fire hazard in machinery space.
 2. With reference to the combustion of hydrocarbons in air:
 - (a) draw a diagram showing EACH of the following features: MPT notes, dick curve
 - the point at which the atmosphere becomes inert 11 %
 - the variation in the upper and lower explosive limits 2 - 10%
 - the inflammable zone 2 to 10% (7)
 - (b) state the device that would be used to test the combustion potential of an atmosphere, giving a typical *safe* reading obtained from the instrument. (3)
Explosimeter, sample of air is drawn in a sample chamber via a hand pump . The chamber has a heater element that allows any combustables to burn. 1% reading is normal for a safe reading
 3. (a) Define the term *harmonisation system of survey and certification*. (5)
Solas, Marpol, Load Line
 - (b) List FIVE statutory certificates that would be required to be carried by a commercially operated motor yacht of 500 gross tonnes and carrying no more than 12 passengers. (5)
IOPP, IAPP, SEWAGE,ISM, Safety Management Certificatet, Tonnage Certificate, IloadLine Certificate
4. (a) A vessel with an operating displacement of 1200 tonnes has a fuel coefficient of 51,000.

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- Calculate the fuel required for a voyage of 3000nm at a speed of 18 knots, making an appropriate safety allowance. (8)
- (b) State TWO other factors that would be taken into consideration when calculating the fuel safety allowance for a particular voyage. **Bad weather, unpumpable Fuel** (2)
5. (a) List SIX examples of *condition monitoring* that could be applied as part of a planned maintenance system. (6)
- (b) Explain how condition monitoring can assist in expediting classification survey requirements. (4)
6. With reference to the periodical dry-docking of a vessel:
- (a) state FIVE items of information that may be obtained from a *docking plan*; (5)
Location of thru-hulls, anodes, stabilizers, shafts
- (b) state FIVE services that must be made available in order to maintain the safety of the vessel. (5)
Fire fighting water, Communication, Electricity, Fire & Safety Plan.
7. Pipelines on vessels are usually colour coded for ease of identification; state the recommended colours for the following pipelines as indicated in the Code of Safe Working Practices for Merchant Seamen:
- (a) sea water; **Green** (2)
- (b) fresh water; **Green with Blue band** (2)
- (c) fire main; **Green with Red band** (2)
- (d) diesel oil; **Brown with white band** (2)
- (e) compressed air. **Light blue** (2)
8. With reference to transverse watertight bulkheads, state EACH of the following:
- (a) FOUR reasons why these are an important part of the vessels structure; (4)
Reduces floodable volume, adds to strenght of vessel, fire seperation (4)
- (b) the positions of each of the FOUR most important watertight bulkheads; (4)
Collission bulkheading 5-8% of LWL, fore and aft of EngRoom (2)
- © the reason why the foremost bulkhead is of a stronger construction.
Fwd third of ship is 12% thicker.

9. With reference to the International MARPOL Convention 73/78 Annex IV – Sewage pollution:
- (a) state the differences between *grey water* and *black water*; giving typical sources of EACH; (4)
 - (b) describe the THREE sewage handling options that will allow compliance with the convention. (6)
Less than 3 nm approved plant,
3-12 nm committed and enroute,
More than 12 nm raw.
Types of garbage:
Plastic, Food waste, Ground down, Paper products,, Floating dunnage, Ash
Methods of dealing with garbage: Recycle, Reduce, Incinerate
10. (a) Define the term *flag state control*. (3)
- (b) Define the term *port state control*. (3)
- (c) List FOUR reasons why a vessel may be targeted by port state inspectors. (4)