

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”

054-02 ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION

FRIDAY, 10 JULY 2009

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

ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION

Attempt ALL questions

Marks for each question are shown in brackets

1. Describe the safe handling and storage of refrigerant cylinders. (10)

2.
 - (a) Sketch a three stage air compressor, labelling all components and showing the air flow through the system. (3)
 - (b) Describe the operating principles of a three stage air compressor, explaining the safety features. (4)
 - (c) State the advantages of using a three stage air compressor compared to a single stage air compressor delivering the same pressure and mass flow. (3)

3. With reference to hydraulic oil, describe EACH of the following:
 - (a) FIVE functions of hydraulic oil; (5)
 - (b) FIVE sources of contamination. (5)

4. With reference to air conditioning:
 - (a) explain the term *comfort zone*; (1)
 - (b) sketch a *Psychometric Chart* showing the area of the comfort zone and the values of the specific humidity and temperature; (4)
 - (c) sketch a system for the controlling of specific humidity, labelling the MAIN components and direction of air flow. (5)

5. State the MCA's recommendations for maintenance to prevent contamination of ship's fresh water storage and distribution systems of EACH of the following:
 - (a) freshwater storage tanks; (4)
 - (b) distribution systems; (4)
 - (c) hoses. (2)

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6. (a) Explain EACH of the following terms:
- (i) aerobic; (1)
 - (ii) anaerobic. (1)
- (b) Sketch a Biological Sewage Treatment Plant, labelling all components, and showing the process flow through the plant. (8)
7. Describe, with the aid of a sketch, the operation and location of an *Active, Non-retractable Stabilising Fin* system. (10)
8. Describe, with the aid of a sketch, the operation of a charging panel suitable for the delivery of breathing air, from the discharge of the compressor to the charging manifold. (10)
9. With reference to the storage of Aviation Fuel on board yachts, describe FIVE safety features of the storage tank installation. (10)
10. A vessel has six different directions of motion (six degrees of freedom).
Describe, with the aid of a sketch, the six degrees of freedom, stating the nautical term applied to EACH. (10)