

# **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”**

**054-02 ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION**

**FRIDAY, 14 MARCH 2008**

**1400 - 1600 hrs**

Examination paper inserts:

Worksheet Q2

Notes for the guidance of candidates:

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.

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 procedure for recharging a refrigeration system with a Zeotropic refrigerant blend. (10)
  
2. (a) State THREE requirements for compressed air to be utilised for control instrumentation. (3)  
(b) Using Worksheet Q2, identify ALL the components shown on the diagram of a system suitable for the production of compressed air for control instrumentation. (7)
  
3. (a) Describe, with the aid of a sketch, a reverse osmosis plant, from feed water inlet, to product tank, labelling ALL components and showing the position in the system of the monitoring instruments. (6)  
(b) (i) Describe the feed water pre-treatment process before the water enters the spirally wound membrane modules. (3)  
(ii) State the World Health Organisation Standards for impurity limits of the permeate. (1)
  
4. (a) Sketch a single duct air conditioning plant, labelling ALL components and showing the direction of the air flow. (6)  
(b) State the advantages and disadvantages of a single duct air conditioning plant when compared with a twin duct air conditioning plant. (4)
  
5. (a) With reference to sewage plants, state SIX physical properties that can be monitored on board to ensure that the plant is operating effectively. (3)  
(b) Describe the monitoring process for EACH of the properties stated in Q5(a). (7)
  
6. (a) With reference to ship construction, describe a bulkhead. (4)  
(b) State the functions of bulkheads. (6)

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Worksheet Q2(b)

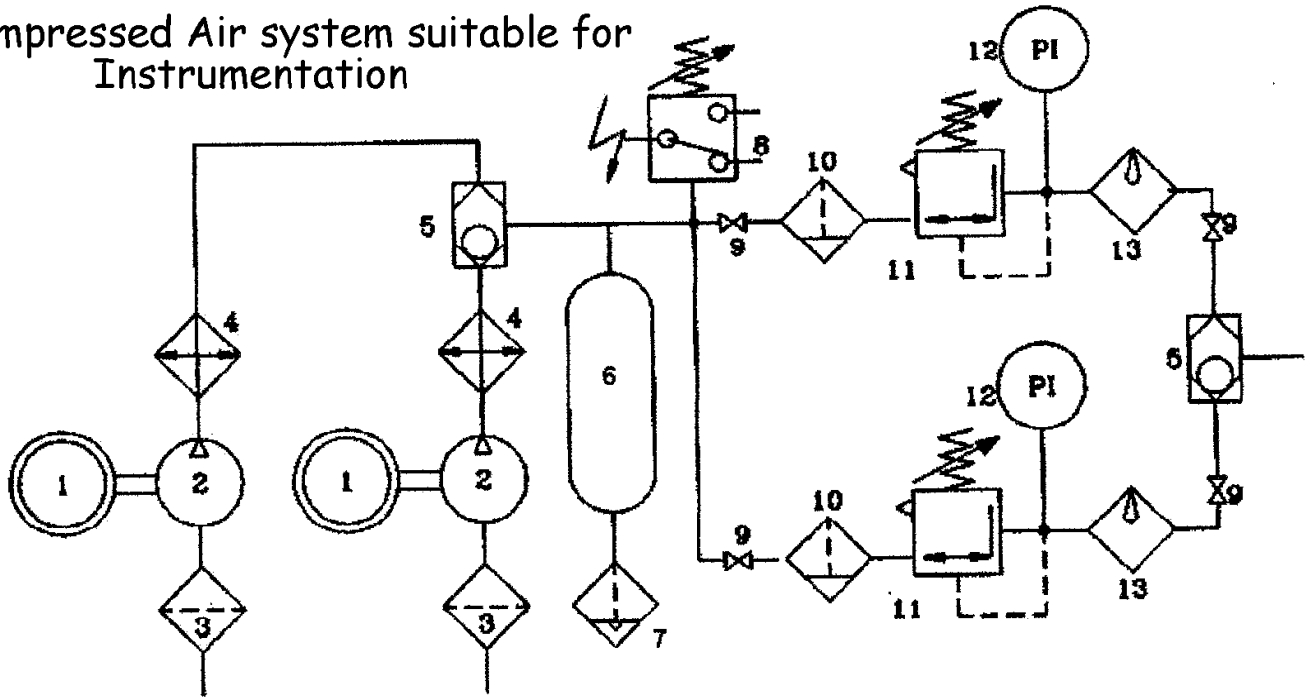
Candidate's Name .....

Examination Centre

7. (a) Describe, with the aid of a sketch, the method of attachment of a *Bilge Keel* to a vessel's hull, explaining the reason for the longitudinal position of the bilge keel, relative to the hull. (7)
- (b) State the advantages and disadvantages of fitting a bilge keel compared with other methods of stabilisation. (3)
8. (a) A crane is being fitted to deploy and recover a pleasure craft from a yacht. With reference to the Merchant Shipping (Hatches and Lifting Plant) Regulations, state the standards that the crane must comply with before being used on board. (7)
- (b) State the information entered on a Proof Load Test certificate. (3)
9. Describe the special considerations that should be given for the carriage of petrol and other highly flammable liquids in hand portable containers. (10)
10. Sketch a *constant pressure* hydraulic circuit suitable for an anchor winch, labelling ALL components. (10)

WORKSHEET Q2

Compressed Air system suitable for Instrumentation



Item	Description
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