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/3) – "YACHT 4"

057-02 OPERATIONAL PROCEDURES, BASIC HOTEL SERVICES AND SHIP CONSTRUCTION

FRIDAY, 16 JANUARY 2009

1400 - 1600 hrs

Examination paper inserts:

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

OPERATIONAL PROCEDURES AND BASIC HOTEL SERVICES

Attempt ALL questions

Marks for each question are shown in brackets

1. Describe, with the aid of a sketch, a membrane bioreactor sewage plant. (10)

   50 parts per million of chorine

2. With reference to water storage, sterilisation and supply, state EACH of the following:

   (a) the arrangement for vessels with only one freshwater tank sited in the double bottom; (2)

   (b) why sight glasses or level gauges are to be provided instead of reliance on sounding rods or tapes; (1)

   (c) why natural rubber should not be used in seals or joints on fresh water systems; (1)

   (d) the routine treatment of freshwater taken from ashore or water barge; (2)

   (e) why UV sterilisers cannot be used as the sole means of bacterial control; (2)

   (f) the means to prevent possible contamination from WC flushing water supply. A vacuum breaker valve (2)

3. List TEN desirable properties of a refrigerant. (10)

   Lubricate
   Seal
   Prevent corrosion
   Boil
   Condense working pressures
   Non toxic
   Non explosive
   Flamible
   Must have a good heat transfer rate
   Available world wide.
   They should not react with lubricants.
   Should operate at low preasure

4. With reference to chilled water air conditioning system systems and associated refrigeration plants:

   (a) describe what is meant by a chilled water system; (2)

(b) explain how a chilled water system operates; (4)

(c) list FOUR safety devices fitted to a chilled water system and refrigeration plant. (4)

5. With reference to a Shipboard Oil Pollution Emergency Plan (SOPEP), state EACH of the following:

(a) the size of vessel which must carry a plan for machinery spaces; (1)

(b) the language in which the plan is written; (1)

(c) the FOUR items which must be included on the plan. (8)

6. State FIVE sources of vibration, explaining how the vibration may be minimised by design in EACH case. (10)

7. State, with reasons, the action to be taken in EACH of the following cases:

(a) a major fire on engine caused by failure of fuel pump erosion plug; (4)

(b) a CO_2 alarm sounding whilst you are on watch in the machinery spaces; (2)

(c) an acetylene bottle is found to be overheating. (4)

8. With reference to lifting plant and The Code of Safe Working Practices for Seamen:

(a) state how often regular examinations should be carried out; (2)

(b) list FOUR defects which could be found; (4)

(c) state how often lifting equipment should be tested; (1)

(d) state who should carry out the testing of lifting equipment; (1)

(e) state the action to be taken if lifting equipment has been subject to excessive loads exceeding the Safe Working Load. (2)

9. With reference to an engine losing power and misfiring after bunkering marine gas oil for main propulsion purposes:

(a) state the immediate action to be taken; (1)

(b) state THREE possible causes; (3)

(c) describe the action to be taken in the event of EACH of the causes stated in Q9(b) being found to be the source of the problem. (6)

10. (a) State the purpose of the collision bulkhead and the regulations appertaining to its dimensions and position. (4)

To protect the integerlly of the vessel incase of collision.

(b) Explain the difference between A, B and C class bulkheads. (6)

A class buck head is made of steel
B made of steel or any non combustible
C non combustible material

Class A
A-60 rated for 60 minutes
A-30 rated for 30 minutes
A-15 rated for 15 minutes
A-0 rated for 0 minutes