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, 18 APRIL 2008

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. (a) State the meaning of the term *machinery space*. (2)

   (b) State TWO warnings which should be listed on a notice outside an unmanned machinery space. (2)

   (c) State, with reasons, the procedure to be followed prior to entry into an unmanned machinery space. (3)

   (d) State, with reasons, the precautions to be adopted by a person alone in the space. (3)

2. Describe EACH of the following, stating their purpose:

   (a) Merchant Shipping Notices; (4)

   (b) Marine Guidance Notes; (3)

   (c) Marine Information Notes. (3)

3. With reference to Oily Water Separators and the pumping of bilges, explain EACH of the following:

   (a) why some systems situate the bilge pump after the separator, rather than before the separator; (3)

   (b) the meaning of *coalescence*; (3)

   (c) why some systems incorporate heating elements; (2)

   (d) the purpose of a recirculation line. (2)

4. 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 Q4(b) being found to be the source of the problem. (6)

5. (a) State THREE advantages of using condition monitoring as part of a planned maintenance system. Pre plan a maintenance schedule, order correct parts ahead of time, arrange any subcontractors ahead of time (3)

(b) State THREE examples of criteria that could be used as a basis for condition based maintenance. Vibration and pulse, to detect bearing deterioration (3)
Oil sample analyses
Visual checks to detect wear ,leakage, corrosion etc. (4)

(c) State FOUR reasons for keeping records of operating criteria and planned maintenance carried out. Keeping records over time shows trending of machinery.
This can make reordering the correct parts easier and faster
Can help to pre plan maintenance schedules.
If the problem is on going arrange a specialist to investigate and repair

6. The temperature of a vessel's deep freeze is rising. Investigation reveals the compressor is cycling (repeatedly starting and stopping).

(a) State FOUR possible causes for the fault. (4)
Expansion valve blocked, low coolant sea strainer blocked, faulty pressure sensor, low refrigerant. (6)

(b) Explain the procedure to rectify the faults listed in Q8(a). Check expansion valve for blockage and replace if needed. Check sea water strainer and clean if needed. Check sensor and replace if needed. Check refrigerant pressures, recharge if needed to the correct pressure.

7. With reference to air conditioning and the use of psychrometric charts:

(a) sketch a simple psychrometric chart, showing the saturation line and the line of 50% humidity; (6)

(b) explain how the humidity of air is established using thermometers and the chart. (4)

8. With reference to superchlorination of fresh water tanks:

(a) state TWO occasions when this should be carried out; When work has been carried out inside the tanks. When new protective coating has been applied (2)

(8)

(b) list the procedure to be followed. Fill tanks with water, add 50ppm of bleach to each tank. Open and cycle water thought every tap, shower, fossit on board. Leave for 6 hours then drain. Refill tanks with freat water adding.5ppm of blach. Then drain though every tap,shower,fossit on board. Once complete refill and the tanks are ready

9. Define EACH of the following, stating an example in EACH case where a fire could be caused:

(4)

1. (a) spontaneous combustion; in contact with oil or grease spontaneous combustion can take place with out the supply of oxygen to subtain the fire (3)

(3)

(b) flash point; where a substance rises in temperature to a point where it ignites.

(c) auto ignition temperature; to where a substance automaticly ignites because it has reached the correct temperature.

10. With reference to ocean going vessels, define EACH of the following:

(a) trim; Is the difference between the forward and aft draughts (1)

(b) freeboard;is the distance between the freeboard deck (main deck) and the waterline (1)

(c) camber; of decks allows for water run off over the side. With the deck being slightly higher in the centre line of the vessel and lower on the outer edge of the decks. Normally camber is a ¼ inch rise per foot from centre line to the outside of the deak (1) (1)

(d) length between perpendiculars; is the summer load . Is measured from the forward side of the stem and the after side of the rudder post (1)

(1)

(e) length Overall; This is the extreme length of the vessel from the aft side of the stern to forward most part of the stem at the bow (1)

(f) sheer; Is the upward rise from amid ship towards the bow and stern. It helps in bad weather to stop sea water from washing onto the deak. (1)

(1)

(g) stem; Aft end of the vessel

(1)

(h) draft marks; marks each side of the vessel forward and aft used to indicate the amount of vessel below the water line.

(i) draft; The deapth from water line to the underside of the keel

(j) depth;is measured from the upper deak to the underside of the keel