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*. Any space containing machinery that could injure or in danger people (2)

(b) State TWO warnings which should be listed on a notice outside an unmanned machinery space .wear Safety eye wear. Machinery may start automatically. (2)

(c) State, with reasons, the procedure to be followed prior to entry into an unmanned machinery space. Answer the alarm, hit the dead man alarm and inform the bridge about the time you are in there for. (3)

(3)

(d) State, with reasons, the precautions to be adopted by a person alone in the space.
You have to make sure someone knows where you are and time you will be in there, also check with someone every 1 hour.

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

(a) Merchant Shipping Notices; monitory notices issued to ships (4)

(b) Marine Guidance Notes; notice issued to ships and for guidance (3)

(c) Marine Information Notes. Are for shore base operations eg, managerment systems (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; so in an event of overboard discharge oily water will not be accitentley pumped over board (3)

(3)

(b) the meaning of *coalescence*; many many small droplets coming together forming larger droplets (2)

(c) why some systems incorporate heating elements;are there to reduce the thiscostily add separation process. (2)

(d) the purpose of a recirculation line.

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; rise the alarm and . check all fuel valaves. in form the bridge. Shut down engine and Check sample fuel. (1)

(b) state THREE possible causes; water in fuel, or blockage in fuel filters due to forgen solids or blocked injectors. (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. Replace filters and check fuel sample, isolated tank and start purifiaring for that tank. If possible use a differan't tank. (6)

5. (a) State THREE advantages of using condition monitoring as part of a planned maintenance system. Condution monintoring would aid in protecting engine failure and longer service life and cost etectiveness. (3)

(b) State THREE examples of criteria that could be used as a basis for condition based maintenance. Lube oil sample, vibration readings chart. Trending of differenal pressures and temperatures. (3)

(c) State FOUR reasons for keeping records of operating criteria and planned maintenance carried out. For insureance reasons, trending, to able maintence to be predicted. And for spare parts inventory (4)

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. low refrigerant, expansion valve blocked, faulty temp prope.fauly compressor. Blocked liquid strainer/dryer. (4)

(b) Explain the procedure to rectify the faults listed in Q8(a). Remove gas and replace dryer, check liquid strainer. suck all moisture out of system using a vac pump and recharge with gas. (6)

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; after someone has been into the tank,or every 3 months. (2)

(8)

(b) list the procedure to be followed.tank and piping taps, fossits etc should be dozed to 50ppm left to stand for at least 4 hours though every pipe work and tap,shower head sprinker etc, drain out and top up with 0.2 ppm

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

(a) spontaneous combustion; a material that combusts with no external ignition. (4)

(b) Flash point; is when a material reaches a certain temperature where it ignites without an external ignition. (3)

(3)

(c) auto ignition temperature; lowest point of temperature where the material ingnites without ignites.

10. With reference to ocean going vessels, define EACH of the following:
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(a) trim; draft forward and draft aft (1)

(b) freeboard; distance from main deck to water level (1)

(c) camber; the cerverher angle of the deck (1)

(d) length between perpendiculars; centre of the rudder post to where the stem meets the water level (1)

(1)

(e) length Overall; from the foreward most point to the most aft point on the boat.

(1)

(f) sheer; the upwards rise at the bow to allow more free board

(1)

(g) stem; forward most part of the inside part of the bow

(1)

(h) draft marks; page 232 MPT notes

(1)

(i) draft; the length between water line and bottom of keel

(1)

(j) depth; from the underside of the keel to the top of the weather deck plate