Dec. 2006

Dummy 2

ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION

Attempt ALL questions

Marks for each question are shown in brackets

1. Explain the probable causes and remedial actions, when a refrigeration compressor runs for a short time, stops and fails to re-start. (10)

2. With reference to sterilisation of water for drinking, describe the operation of EACH of the following systems:

P.20 A21

(a) chlorine; (5)

P.11.

(b) silver ion. (5)

+ ADDED DESCRIPTION.

3. (a) Sketch the electrical control circuit of a stand alone air-conditioning unit. (5)

(b) Describe the operation of the circuit sketched in Q3(a), including the operation of the safety devices. (5)

4. As a Chief Engineer, write standing orders given to personnel on the potential hazards encountered when operating and maintaining sewage systems. (10)

Note: Disregard general mechanical and electrical hazards.

5. Describe THREE procedures that can be carried out to locate leaks in a refrigeration system. (10)

6. Describe, with the aid of a sketch, a compressed air system suitable for use as control air, explaining the operation of EACH system component. (10)

7. (a) Describe a *Retracting Fin* stabilizing system. (5)

(b) Sketch a block diagram of the control system, for the stabilizing system described in Q7(a). (5)

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8. With reference to Fig Q8, identify ALL the indicated components of the hydraulic system. (10)

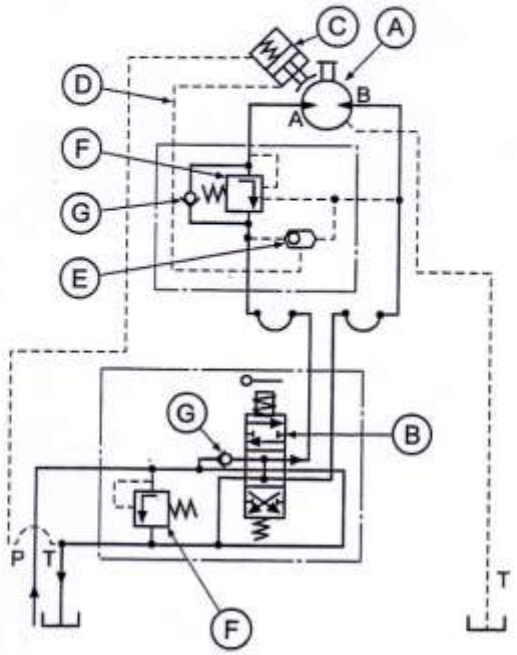

Fig Q8

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 Explain EACH of the following terms:

(a) deadweight; (2)

(b) displacement; (2)

(c) lightweight; (2)

(d) gross tonnage; (2)

(e) registered tonnage. (2)

Sept. 25. 2006

ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION

Attempt ALL questions

Marks for each question are shown in brackets

1. Explain EACH of the following refrigerant terms:

   (a) zeotropic blend; (3)

   (b) azeotropic blend; (3)

   (c) near-Azeotropic blend; (2)

   (d) glide. (2)

2. Describe, with the aid of a sketch, a *Direct Expansion Refrigeration System*, for an air cooler in an air conditioning installation. (10)

3. (a) Describe a reverse osmosis water generation plant. (8)

   (b) Explain how the water obtained from the plant described in Q3(a), is made potable. (2)

4. (a) State MARPOL Annex IV Regulation 8 – *Discharge of Sewage*, which came into force on 1st August 2005. (4)

   (b) Sketch a block diagram of a *Chemical Sewage* treatment plant. (6)

5. Describe the operation of a four-stage High Pressure reciprocating air compressor. (10)

6 (a) State FIVE desirable properties of Hydraulic oil. (5)

   (b) State FIVE reasons for cavitation to occur in a hydraulic pump. (5)

7 (a) Describe the operation of a *Fixed Fin* stabilising system. (6)

   (b) State, with reasons, the positioning of the fins (4)

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9. Describe the construction of tanks suitable for the storage of aviation fuel on board yachts, including the safety requirements for the storage tanks. (10)

10. (a) Explain, with the aid of sketches, the terms *hogging* and *sagging*, with reference to vessels meeting waves having the same length as the vessel. (8)

(b) State the parts of the structure that resist the stresses described in Q10(a). (2)

ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION

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1. Describe, with the aid of a sketch, the procedure for *Liquid Charging* a refrigeration plant, stating all safety procedures and checks to be carried out. (10)

2. (a) List THREE physical properties that can be monitored to ensure that a sewage treatment plant is operating effectively. (3)

   (b) Explain the tests carried out on TWO of the properties in Q2(a), to determine the concentration levels. (4)

   (c) List the personal hygiene requirements for personnel operating and maintaining sewage treatment plants. (3)

3. Sketch a line diagram of a single stage reverse osmosis plant, labelling ALL components and indicating the direction of flow. (10)

4. Outline the preparation and procedures for dry-docking a vessel, to the point where the dock is fully drained. (10)

5. Explain the maintenance and inspection that should be carried out on SCUBA cylinders. (10)

6. (a) Explain TWO recognised ship construction procedures for connecting steel and aluminium. (7)

   (b) State THREE disadvantages of using aluminium in ship construction. (3)

7. (a) Describe how the routine inspection for lifting gear is carried out. (6)

(b) State the time periods between EACH of the following *Lifting Equipment* requirements:

(i) inspection; (1)

(ii) testing. (1)

(c) Describe the procedure for recording the results of the inspection and tests. (2)

8. Explain the requirements for the stowage and operation of LPG cylinders. (10)

9. Describe the operation of an *Active Fin Stabiliser*. (10)

10. (a) Describe a system for controlling the relative humidity in an air conditioning system, by the use of recycled air only. (5)

(b) Sketch the system described in Q10(a). (5)

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ADVANCED HOTEL SERVICES AND SHIP CONSTRUCTION

Attempt ALL questions

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1. (a) State MARPOL Annex IV Regulation 11 – *Discharge of Sewage,* which came into force on 1st August 2005. (4)

   (b) With reference to MARPOL Annex IV, describe the equipment and systems required for the control and discharge of sewage. (6)

2. (a) Explain the reason for the use of a *High Pressure Cut Out*, in a vapour compression refrigeration system. (2)

   (b) Describe, with the aid of a sketch, the operation of a *High Pressure Cut-Out* employed in a vapour compression refrigeration system. (8)

3 State how a ship's structure is designed to resist the stress due to EACH of the following:

   (a) the weight of the main propulsion machinery; (3)

   (b) discontinuities such as ends of superstructure; (2)

   (c) openings in the deck; (3)

   (d) connection of stays. (2)

4. (a) Describe, with the aid of a sketch, the operation of an activated *Folding Stabiliser Fin*. (8)

   (b) State an advantage and disadvantage of a stabiliser fin compared with tank stabilisation. (2)

5. Describe the inspections, operations, and treatments that are required to be carried out on a vessel's domestic drinking water system, after an extended lay up, to ensure that the water is potable. (10)

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6. (a) State THREE dangers arising from the use of LPG open flame appliances. (3)

(b) Describe the requirements for a *Gas Detector*, suitable for an LPG installation. (7)

7. (a) State THREE contaminants that may be found in compressed air, outlining the effect of the contaminant on the user when the compressed air is used for diving (SCUBA) purposes. (4)

(b) Describe TWO possible sources of contamination of compressed air used for breathing, outlining how they may be prevented from entering the system or removed from the system. (6)

8. (a) Sketch the temperature, electrical control circuit of a *Stand Alone Air Conditioning* unit. (5)

(b) Describe the operation of the circuit sketched in Q8(a), including the safety devices. (5)

9. (a) With reference to the *Testing and Examination of Lifting Equipment*, describe EACH of the following:

(i) a competent person; (4)

(ii) thorough examination. (4)

(b) State the time periods for the inspections and examinations of lifting plant. (2)

10. With reference to ensuring the watertight integrity and strength of a bulkhead:

(a) state the requirements for openings through watertight bulkheads; (4)

(b) state the requirements for pipes passing through a watertight bulkhead. (6)