INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

End Semester Examination December 2017

Programme: B.Tech (Marine Engineering) **Semester:** VI

Subject Name: Marine Auxiliary Machines-II **Subject Code:**UG11T2604/1604

Date: **Maximum Marks:**100

Time: 3 Hrs **Pass Marks:** 50

PART – A

All questions are Compulsory (10X3=30 Marks)

1.

(a) What are the adverse effect of moisture in refrigeration system? How it can be removed.?

(b) Define relative humidity. How does it affect air conditioning? What is comfortable range and recommended range of humidity in airconditioning system?

(c) What is the function of mixing column in Main Engine F.O. service system?

(d) State true or False and ***Justify Your Answer***

"Low discharge pressure in refrigeration compressor indicates closure of refrigerant flow to all cold compartments."

(e) Choose appropriate answer and ***Justify Your Answer***

Burning fuel with a high Sulphur content in a diesel Engine will _____.

i) Increase thermal efficiency

ii) Cause clogging of the fuel system

iii) Increase the ability of the engine to start in cold weather

iv) Produce corrosion in the cylinder and exhaust system at low load

(f) State true or False and ***Justify Your Answer***

"Higher Cetane no of a fuel causes higher ignition delay."

(g) State true or False and ***Justify Your Answer***

"Lower the Viscosity index, higher is the resistance to change in viscosity."

(h) What is noise What are Different sources of Noise on ship? State two prominent ways to reduce noise.

(i) Are de-tuners and dampers fitted at the nodal points or anti-nodal points with in a shafting system associated with diesel engine?

(j) What is an expansion valve? What different Types of expansion valves are used in refrigeration and air conditioning systems?

PART – B

Answer any five of the following seven questions

(5X14=70 Marks)

2.

(a) Draw flow diagram and P-H (pressure-enthalpy) diagram for a simplified vapor Compression system. Explain how pressure, temperature and physical state of refrigerant varies in the system. Label the diagram. [8 marks]

(b) With respect refrigeration system explainthe sources of air getting into the system, its effect and methods adopted to removeair from the system? [6 marks]

3.

(a) What is secondary refrigerant? What is main advantage of having this arrangement compared to direct expansion? Give some examples of secondary refrigerants with their properties. [3+3+3 marks]

(b) In reference to Cargo hold refrigeration, Sketch and describe briefly Direct expansion battery with air circulation. [5 marks]

4.

(a) What are different types of Air conditioning System? [4 Marks]

(b) With a neat labelled diagram describe briefly Marine Airconditioning system. [10 Marks]

5.

(a) With neat labelled diagrams differentiate and describe Hydrostatic and hydrodynamic lubrication. [8 Marks]

(b) Give examples of each with respect to marine Diesel engine. [2 Marks]

(c) What are property requirement of lubricating oil for Diesel engine lubrication. Give at least 4 properties. [4 Marks]

6.

(a) What are Different additivesused in formulation of Engine oil and state their significance. [7 Marks]

(b) State the location and purpose of fitting an oil separator in the vapour compression refrigeration system. Draw a neat labelled diagram of the

oil separator and describe its working briefly. [2+5 Marks]

7.

(a) What is Crude Oil, Residual oil and Emulsified fuel? What are different types of crude oil? [4 Marks]

(b) What are various components present in Marine Residual Oil which has adverse effects on marine engines. State their maximum limits as per ISO 8217:2012 [5 Marks]

(c) Discuss the advantages and disadvantages of LNG as marine fuel as compared to residual fuel. [5 Marks]

8.

a) What are the causes and effects of torsional vibrations in crankshaft? [5 Marks]

b) How a de-tuner or torsional vibration damper can reduce the effects of torsional vibration? [5 Marks]

c) Draw a simple diagram of Torsional vibration Damper and label all its parts. [4 Marks]

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