

INDIAN MARITIME UNIVERSITY
(A Central University, Govt. of India)

B.Tech. (Marine Engineering) - Semester V
December 2015 End Semester Examinations

Marine Auxiliary Machines - II

Subject Code: UG11T1604

Time: 3 hrs

Max Marks: 100

Date: 18.12.2015

Pass Marks: 50

Part-A

(10 x 3 Marks=30 Marks)

Compulsory Question

1. (a) Name the different refrigeration methods.
- (b) Name the components in a vapour compression refrigeration system?
- (c) How purging of air from a refrigeration system is carried out?
- (d) Why secondary refrigerant is used in cargo holds refrigeration system?
- (e) What are the properties of air that are altered / modified by an air conditioning system?
- (f) What is Noise? How is noise expressed?
- (g) What is meant by Critical Speed or Bared Range in a Marine Diesel Engine?
- (h) What is Residual Fuel Oil (or) Heavy Fuel Oil?
- (i) What is Elastohydrodynamic lubrication?
- (j) Name some of the desirable properties / characteristics of a good lubricant

Part-B

(5x14 Marks=70 Marks)

Answer any FIVE of the following

2. (a) Sketch and describe the working of a refrigeration system, with automatic controls, used for maintaining the temperature of different provision rooms carrying food stuffs / provisions for crew members. (10 Marks)
- (b) What are the desirable properties of a good refrigerant (4 Marks)

3. (a) Explain the functions of the following safety devices fitted on a refrigeration system:
- i. High Pressure [HP] Cut Out
 - ii. Relief Valves
 - iii. Oil Differential Cut Out
 - iv. Low Pressure [LP] Cut Off (8 Marks)
- (b) Give the causes for the following troubles in a refrigeration system: (6 Marks)
- i. Compressor short cycles on low pressure control
 - ii. Discharge pressure too high
 - iii. Suction pressure too high & compressor crankcase sweating
4. (a) Draw & explain the brine system for refrigerated cargo holds (8 Marks)
- (b) Explain the terms: micro-organisms, dead cargo & live cargo w.r.t. refrigerated cargo. (6 Marks)
5. (a) Describe an single duct air condition system with a simple sketch (8 Marks)
- (b) Discuss the design considerations of the ventilation system for
- i) Battery room
 - ii) CO₂ room (6 Marks)
6. (a) What are the sources of noise in a ship and describe the techniques to suppress it? (6 Marks)
- (b) What are the various modes of vibration in a ship? What are the sources of vibrations and describe the techniques to suppress it? (8 Marks)
7. (a) Explain the treatment of fuel carried out for its effective combustion in Marine I.C Engines (8 Marks)
- (b) List the additives in a crankcase L.O of a 4 stroke Marine I.C. Engine and explain why they are used (6 Marks)
8. (a) What are the properties of a good L.O? (4 Marks)
- (b) What are the details given in a L.O analysis reports? (4 Marks)
- (c) What are different types of Main Bearing used for 2 stoke & 4 stroke Marine Diesel Engine? (6 Marks)
