

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations- June-July 2019
B.Tech (Marine Engineering)
Semester – VI
Marine Auxiliary Machines II
(UG11T1604 / UG11T2604)

Date:01-07-2019

Max Marks: 100

Duration: 3 Hrs

Pass Marks: 50

PART – A **Marks: 10 x 3 =30**
(All Questions are compulsory)

1. a. What are the desirable properties for a L.O of a refrigeration system?
- b. What are the properties of air that are altered / modified by an air conditioning 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. Mention the four types of Lubrication
- f. What is meant by Critical Speed or Bared Speed Range in a Marine Diesel Engine?
- g. What is Noise? How is noise expressed?
- h. What is Residual Fuel Oil (or) Heavy Fuel Oil?
- i. Why Trunk Piston Engine system Lub Oil is recommended to be renewed after a certain period of engine running hours?
- j. Name the different refrigeration systems / methods

Part – B **Marks: 5 x 14 =70**
(Answer any 5 of the following 7 Questions)

2. (a) Sketch and describe the working of a refrigeration system (10 Marks)
- (b) Explain the principle of Refrigeration (4 Marks)
3. (a) Sketch and describe a TEV in a fridge system (8 Marks)
- (b) Give the causes for the following troubles in a refrigeration system:
 - i. Compressor short cycles on low pressure control (2 Marks)
 - ii. Discharge pressure too high (2 Marks)
 - iii. Suction pressure too high & compressor crankcase sweating

(2 Marks)

4. (a) Explain the functions of the following safety devices fitted on a refrigeration system:
- i. High Pressure [HP] Cut Out (2 Marks)
 - ii. Relief Valves (2 Marks)
 - iii. Oil Differential Cut Out (2 Marks)
 - iv. Low Pressure [LP] Cut Off (2 Marks)
- (b) Explain the following terms w.r.t. refrigerated cargo
- i. Micro-organisms (2 Marks)
 - ii. Dead cargo (2 Marks)
 - iii. Live cargo (2 Marks)
5. (a) Draw & explain the brine system for refrigerated cargo holds (8 Marks)
- (b) Explain the Ventilation System for the following
- i. Battery Room (3 Marks)
 - ii. CO₂ Room (3 Marks)
6. (a) Describe a single duct air condition system with a simple Sketch. (8 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? (6 Marks)
7. (a) Explain the treatment of Fuel Oil carried out on board 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 is hydrodynamic lubrication? How it is generated in journal bearing? What are the factors for which the bearings can fail? (10 Marks)
- (b) What are the details that are given in a L.O analysis reports? (4 Marks)
