INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)

June 2016 End Semester Examinations
B.Sc. (Nautical Science) - 2013 batch onwards
Semester III
Marine Engineering,Automation and Control Systems – III
(UG21T2312)

Date : 18.07.2016//F.N **Maximum Marks: 70**
Time: 3 Hrs **Pass Marks : 35**

NOTE: Attempt any SEVEN questions. All questions carry equal marks **7x10=70**
Use of Non-programmable scientific calculator is allowed. All Drawings to be neatly labelled

1. (a) Draw an Alfa Laval type Fresh Water Generator on board and describe its working in detail.
(b) Discuss the means of treatment on board to convert distilled FW into Potable Drinking water

2.(a) What are the two main types of boilers on board. Give their 4 main differences.
(b) Describe the construction and operation of a Cochran Composite boiler with a sectional drawing

3. (a) Describe the differences between refrigeration, air conditioning and ventilation
(b) Describe the vapour compression system of refrigeration with a line diagram sketch with labelling of components

4. Discuss the various types of pumps on board and the advantage of each type

5. (a) Describe the reciprocating type single acting piston pump with a sketch
(b) Draw a simple bilge/ballasting line diagram on a ship

6. (a) Describe the main components of a steering gear on board.
(b) Explain the purpose and working of hunting lever.

7. (a) Draw and describe a 2-ram hydraulic steering gear system showing isolating, bypass and relief valve arrangements
(b) Discuss the importance of a relief valve in the working of a steering gear system on board

8.(a) What are the uses of compressed air on board, with special reference to diesel engines
(b) Draw and describe a domestic fresh water hydrophore system charged with compressed air and having auto start/stop arrangements

9. (a) Describe the three conditions to be met before synchronising and load sharing of two alternators.
(b) Describe a marine transformer and its main elements