

# INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

**End Semester Examination Dec 2019/Jan 2020**

**B.Sc. (Nautical Science)**

**Semester -III**

**UG21T2312- Marine Engineering, Automation and Control Systems – III**

**Date: 19.12.2019**

**Max Marks: 70**

**Time: 3 Hours**

**Pass Marks: 35**

**Answer any SEVEN of the following. (7 x 10 = 70 Marks)**

**All Questions carry equal marks.**

1. Draw sketch of a low pressure evaporator type fresh water generator and describe the working of the same. (10 marks)
2. Draw a sketch of smoke tube boiler and explain working of same. (10 marks)
3. a) Name the various mountings fitted on a boiler. (4 marks)  
b) List out the advantages and disadvantages of water tube boiler over smoke tube boiler. (4 marks)  
c) Name the purpose of blow down valve in a boiler. (2 marks)
4. a) Define: (10 marks)  
(i) Hardness (ii) Plasticity (iii) Elasticity  
(iv) Ductility (v) Malleability
5. a) Write down the properties of metal? (3 marks)  
b) What are the uses of ceramics on board ships. (3 marks)  
c) Describe heat treatment methods of steels? Explain. (4 marks)
6. a) What do you understand by helm indicator? Where are they fitted on board ship? (3 marks)  
b) What do you understand by the term "priming" of centrifugal pump? (4 marks)  
c) Explain the use of hunting lever in steering gear? (3 marks)
7. Draw a sketch of rotary vane steering gear system and explain its working. (10 marks)
8. a) List down different types of electrical supply available in ships. (2 marks)  
b) Name the services to be supplied with emergency generator. (3 marks)  
c) Explain the procedure of maintenance of battery onboard a ship. (5 marks)
9. a) Explain about the ballasting/ de-ballasting system of a ship by a diagram. (10 marks)