INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

END SEMESTER EXAMINATIONS –JUNE 2019

B.Sc (Nautical Science)

Semester-III

Marine Engineering, Automation & Control System, Paper I

UG21T3303

Date:12-07-2019 **Maximum Marks: 70**

Time: 3Hrs **Pass Marks: 35**

Note: Question No.1 is compulsory.
Answer any 6 Questions from remaining 8 Questions (each of 10 marks).
Scientific Calculator is permitted if required.

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1. a) Define Hook's Law (2 Marks)
   b) Define Hardness (2 Marks)
   c) What is a Step Up Transformer? (2 Marks)
   d) Name the different types of Pumps (2 Marks)
   e) Name the different methods used for generating fresh water from sea water onboard a ship (2 Marks)

2. a) Draw & explain a simple stress-strain curve for an elastic body (5 marks)
   b) Explain the following
      (i) Tensile force (2½ marks)
      (ii) Compressive force (2½ marks)

3. a) Explain the following
      (i) Ductility (2½ Marks)
      (ii) Malleability (2½ Marks)
   b) Name the different types of steels and their uses (5 Marks)

4. a) With the help of an Iron-Carbon diagram show the role of carbon in steels and its effect on properties (5 Marks)
   b) Explain the various methods of heat treatment of steels (5 Marks)

5. a) Explain the procedure for maintenance of batteries onboard ship (5 Marks)
   b) Explain the procedure for starting emergency generator manually (5 Marks)

6. a) Explain a short circuit trip (5 Marks)

b) Explain the paralleling operation of alternators (5 Marks)

7. a) Explain the working of any one type of fresh water generator used onboard a ship (5 Marks)

b) Explain the working of a Fresh Water Hydrophore system (5 Marks)

8. a) Draw and explain the construction and working of a boiler (5 Marks)

b) Explain the working of an air compressor (5 Marks)

9. a) Draw and explain the working of a hydraulically driven submerged pump – Framo Pump (5 Marks)

b) Explain the working of 2 ram electro hydraulic steering gears (5 Marks)

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