# Indian Maritime University

(A Central University, Govt of India)
B Sc (Nautical Science)
July 2018 End Semester Examinations
Semester-III
UG21T3303-Marine Engineering, Automation & Control System, Paper I

Duration:3 Hrs Max Marks:70 Marks
Date: 06.07.2018 Pass Marks:35 Marks

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

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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) State the Principle of Refrigeration (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) (5 marks)

   b) With the help of an Iron-Carbon diagram show the role of carbon in steels and its effect on properties (5 Marks)

4. a) Name the different types of steels and their uses (5 Marks)

   b) Explain the procedure for maintenance of batteries on board ship (5 Marks)

5. a) Explain the procedure for starting emergency generator manually (5 Marks)

   b) Explain the parallel running and load sharing of alternators. (5 Marks)

6. a) Draw and explain a short circuit trip (5 Marks)

b) Draw and explain the working of a Fresh water generator (5 Marks)

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

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

8. a) Draw and explain the working of compression refrigeration cycle (5 Marks)

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

9. a) Draw and explain the working of 2 ram electro hydraulic steering gears (5 Marks)

b) Draw and explain the working of a telemotor control system (5 Marks)