

**INDIAN MARITIME UNIVERSITY**  
(A Central University Government of India)  
**END SEMESTER EXAMINATIONS-JUNE/JULY 2019**  
**B.SC NAUTICAL SCIENCE**  
**SEMESTER-III**  
**MARINE ENGINEERING, AUTOMATION AND CONTROL SYSTEM**  
**PAPER-III**  
**(UG21T2312)**

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**Date: 20-07-2019**

**Maximum Marks: 70**

**Duration: 3 hrs.**

**Pass Marks: 35**

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**Note:**

**Answer any 7 Questions out of 9 Questions (each of 10 marks).**

**Scientific Calculator is permitted if required.**

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1. a) Name any two prime movers used for an alternator/generator (2 Marks)  
b) What is a step up transformer? (2 Marks)  
c) Name the different methods used for generating fresh water from sea water onboard a ship (2 Marks)  
d) Name the different types of Boilers? (2 Marks)  
e) Name the different types of cargo pumps used on board ship (2 Marks)
  
  2. a) How are generators paralleled on ships? (5 Marks)  
b) How are different voltages supplied for different application on the ships? (5 marks)
  
  3. a) List out the maintenance to be carried out for transformer onboard a ship (5 Marks)  
b) Name the safety protections fitted in the main switch board (5 Marks)
  
  4. a) Draw and explain a Overload Trip / Relay (5 Marks)  
b) Draw and explain a Short Circuit Trip / Relay (5 Marks)
  
  5. a) With neat sketch explain the working principle of transformer (5 Marks)

b) With a simple sketch explain the working of any one of the fresh water generator on board a ship (5 Marks)

6. a) Explain water tube boiler with a neat sketch (5 Marks)

b) What are the uses of steam on board ships? (5 Marks)

7. a) Draw & Label a Fire Main Line / System showing different pumps & valves (indicate their locations also) (5 Marks)

b) With a help of a neat sketch explain the working of an air compressor (5 Marks)

8. a) With the help of a neat sketch explain the working of a hydraulically driven submerged cargo pump (Framo pump) (5 Marks)

b) With the help of a simple sketch explain the working of an electro hydraulic steering gear system (5 Marks)

9. a) Draw and explain the telemotor control system of ship's steering gear system (5 Marks)

b) Describe the working of a Compression Refrigeration Cycle (Vapour Compression System) with a simple diagram (5 Marks)

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