

INDIAN MARITIME UNIVERSITY
(A Central University Government of India)
END SEMESTER EXAMINATIONS-June/July 2019
B.Sc Nautical Science
Semester-V
Marine Engineering, Automation & Control System - V
(UG21T2506)

Date: 10-07-2019

Maximum Marks: 70

Duration: 3 hrs.

Pass Marks: 35

Note:

Answer any 7 Questions. All questions carry equal marks.
Scientific Calculator is permitted if required.

(5x2=10M)

1. a) Why Engine rpm should be reduced while carrying out Turbocharger Water Washing (2 Marks)
- b) What is ICS Cargo Data Sheet (2 Marks)
- c) What is CPP (2 Marks)
- d) What is UMS (2 Marks)
- e) What is the use of inert gas on an oil tanker (2 Marks)

2. a) w.r.t. to Operation of IC Engine as Main Propulsion Engine, explain Warming Up, Manoeuvring – Starting & Reversing and Full Power Running. (5 Marks)
- b) Explain the following w.r.t. IC Engines:
 - (i) Maximum Continuous Rating (MCR) (2½ Marks)
 - (ii) Specific Fuel Oil Consumption (2½ Marks)

3. a) With the help of a line diagram explain the Jacket Cooling Water System of a Main Engine (5 Marks)
- b) Explain the Reasons and Method of Chemical Treatment of Cooling Water System (5 Marks)

4. a) Draw and Label the Cargo Pipeline of a Liquefied Gas Tanker (5 Marks)
- b) Explain the purposes and functioning of Cargo Heat Exchangers (Heaters, Coolers & Vapourisers) in a Liquefied Gas Cargo Handling System (5 Marks)

5. a) Explain Open Loop and Closed Loop Control System (5 Marks)
- b) What are the arrangements necessary for appropriate and effective Engineering watches to be maintained for the purpose of safety under Unmanned / Unattended Machinery Space (UMS) Operations (5 Marks)

6. a) With the aid of a diagram explain the operation of a Fin Stabiliser
(5 Marks)
- b) With the aid of a diagram explain the operation of a Bow Thruster
(5 Marks)
7. a) Describe the following
- (i) Draft Gauge (2½ Marks)
 - (ii) Trim Indicator (2½ Marks)
- b) Describe the following
- (i) Heel Indicator (2½ Marks)
 - (ii) Load & Stress Indicator (2½ Marks)
8. a) Describe the following:
- (i) Oxygen Analyser (2½ Marks)
 - (ii) Combustible Gas Indicator (Explosimeter) (2½ Marks)
- b) Describe the following
- (i) Toxicity Detector (Dragger Pump type Multi Gas Detector)
(2½ Marks)
 - (ii) Fire Suit (Fireman's Outfit) (2½ Marks)
9. a) Explain an Inert Gas system (5 Marks)
- b) Explain the Bridge Control of "CPP – Diesel Engine" System with a suitable sketch (5 Marks)