

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – December 2022**  
**Programme Name: B Tech (NAOE)**  
**Semester: III**  
**Subject Code: UG12T2305**  
**Subject Name: Introduction to Naval Architecture and Ocean Engineering**

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**Date: 16.12.2022**  
**Duration: 03 hrs**

**Maximum Marks: 70**  
**Pass Marks: 35**

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General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

**Section-A**

*Answer all the questions. Each question carries one mark.*

*Choose the correct answer.*

*(10 x 1 mark= 10 m)*

1. Ocean Thermal Energy Conversion (OTEC) is a technology for producing energy by harnessing the temperature differences (thermal gradients).
2. Spring tides are produced when Sun, Earth and Moon \_\_\_\_\_?
  - a. are in-line (i.e., new/full moon phases)
  - b. are at right angles (i.e., first/last quarter moon phases)
3. Identify the unique feature(s) of a naval vessel
  - a. Multi-speed operations
  - b. Stealth Technology
  - c. Surveillance & Rescue
  - d. All of the above
4. Shrouded/ducted propellers are mostly employed on \_\_\_\_\_
  - a. Bulk carrier
  - b. High speed crafts
  - c. Tugs
  - d. None of the above

5. Tonnage is a measure of \_\_\_\_\_
- Weight
  - Volume
  - Density
  - Pressure
6. Name the mandatory bulkhead(s) that are to be placed in a ship Forepeak, Aft peak & E.R. Fwd/Aft BHD.
7. Name the mooring lines for berthing a vessel adjacent to the quay: Bow line, stern line, spring line and breast line.
8. Class D fire represents burning of \_\_\_\_\_
- Gas fuels like LPG
  - Lubrication oil & fuels
  - Wood, glass fibre, upholstery and furnishings
  - Magnesium and Aluminium
9. Identify the odd man out among the below options:
- Jack-up platform
  - Semi-submersible
  - Compliant tower
  - Drill ship
10. Identify the device used to measure the sub-surface temperature of sea/ocean water
- Stem thermometer
  - Protected reversing thermometer
  - Infrared thermometer
  - Strip-type thermometer

### **Section-B**

*Answer all the questions. Each question carries 02 marks*

*(5 x 2 marks = 10 m)*

11. Floating Production Systems are economical in smaller oil fields only. Can you justify the statement?
12. Define Outfit items.
13. List down the functions of shell plating.
14. Why in Polar Regions the salinity levels are higher?

15. What is/are the measure(s) taken to improve the stability of a passenger vessel?

**Section-C**

*Answer any **Five** out of **Seven** questions.*

*Each question carries 10 marks.*

*(5 x 10 marks= 50 m)*

16. (a) What are the standard sizes of containers and maximum gross weight for all types of containers? Justify your answer, in case the maximum gross weight for all types of containers is constant. (5 m)
- (b) Illustrate why Homogeneous and Non-Homogeneous cargo hold loading is adopted in Dry Bulk Cargo ships. (5 m)
17. Define Ocean currents and different types of currents observed across the oceans.
18. Explain the topography and features of ocean floor with help of a diagram.
19. Define the coefficients which are used to describe the fullness of the ship's overall form.
20. Illustrate the Dynamic effects on the ship hull structure.
21. What is the use of installing Voyage Data Recorder (VDR) on board a vessel? Also list of data that will be recorded with the help of VDR.
22. Why seabed sampling is important and what are the different means by which seabed sampling can be done?

