

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – June 2024**  
**Programme Name: B.Tech (NAOE)**  
**Semester: IV**  
**Subject Code: UG12T2404**  
**Subject Name: Physical Oceanography**

Date: 05.06.2024

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

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

**Section A**

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. Sea water with salinity more than 38 PPT is called
  - a) Brackish Water
  - b) Brine solution
  - c) Fresh water
  - d) Low pH water
2. Major limitation of the satellite remote sensing technique in the ocean observation is
  - a) It is a point observation only
  - b) Low spatial coverage
  - c) Less accurate
  - d) Only surface data can be retrieved
3. Layer with sharp increase in the density in a typical density profile is called
  - a) Thermocline
  - b) Halocline
  - c) Pycnocline
  - d) Barocline
4. Salinity at any location follows the \_\_\_\_\_ curve
  - a) Evaporation – Precipitation curve
  - b) Precipitation – Evaporation curve
  - c) Evaporation + Precipitation curve
  - d) Precipitation + Evaporation curve
5. Gulf stream is an example of
  - a) Warm current
  - b) Cold current
  - c) Polar current

- d) Equatorial current
6. Coriolis effect on any current in the northern hemisphere makes current to
- Deflect towards left of the direction of the current
  - Deflect towards right of the direction of the current
  - Deflect upward
  - Deflect downward
7. Duration of solar tidal cycle is \_\_\_\_hrs
- 12 hrs
  - 6 hrs
  - 24 hrs
  - 48 hrs
8. Ideally tidal range near any amphidromic points is
- 1 mts
  - 0 mts
  - 2 mts
  - 4 mts
9. Oceanic crust starts from
- Continental shelf
  - Continental slope
  - Continental Rise
  - Mid oceanic ridges
10. Polymetallic nodules can be found at the depth of
- 2000 m
  - 1000 m
  - 600 m
  - 6000 m

### **Section B**

Five Questions of 02 Marks each

- Describe the interaction of light with the sea water and how it impacts marine ecosystems.
- Explain the concept of mixed layer in the ocean and how it is important.
- What are warm currents in the ocean and provide two examples of warm currents.
- Describe the terms flood and ebb currents.
- Explore the importance of EEZ of any maritime country.

### **Section C**

Seven Questions of 10 Marks each of which any 05 questions to be answered.

16. Explore the advantages and limitations associated with numerical modeling techniques in ocean observations. Compare this technique with other available ocean observation techniques in detail.
17. Describe the vertical distribution of physical properties such as temperature, salinity, and density in the ocean. Explain the factors that influence these distributions.
18. Give an insight on the major current patterns in the North Indian Ocean and explore the influence of monsoon winds of surface currents.
19. Discuss the causes, characteristics, and potential impacts of tsunamis on coastal communities. How do geological events such as earthquakes, volcanic eruptions, and underwater landslides trigger tsunamis.
20. Describe the various types of marine sediments and their origins. Discuss the processes involved in the formation and deposition of marine sediments.
21. What is continental margin and explain the various portions in it with the help of neat sketch.
22. Write an essay on SOFAR Channel and how it is formed in the oceans. Explain the importance of this channel.

