

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – June 2024**

**Programme Name: B Sc (NS)**

**Semester: IV**

**Subject Code: UG21T5405**

**Subject Name: Meteorology**

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Date: 11.06.2024

Max Marks: 70

Duration: 03 Hrs

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.
- (iii) Ships Weather Code to be permitted.

**Section A**

Choose the correct answer as applicable ( 10 x 1 mark = 10 marks)

1. A \_\_\_\_\_ (Ridge/Trough) isobaric pattern indicates an area of high pressure jutting into areas of low pressure.
2. Katabatic winds blow \_\_\_\_\_ (up-hill/down-hill) at night.
3. The Inter Tropical Convergence Zone (ITCZ) is a low pressure area caused by the convergence of the \_\_\_\_\_ (Northeast trade winds/Westerlies) and the \_\_\_\_\_ (Southeast trade winds/Polar winds) at the equator.
4. In a Tropical Revolving Storm the calm central area of lowest pressure is called the \_\_\_\_\_ (Vortex/Outer storm area).
- 5 Which instrument is primarily used to measure atmospheric pressure?
  - a) Anemometer
  - b) Barometer
  - c) Hygrometer
  - d) Thermometer
6. The weakening or decay of a frontal depression is called \_\_\_\_\_ (Frontogenesis/Frontolysis).
7. An \_\_\_\_\_ (Ocean current/Tidal Stream) is the general movement of a body of sea-water on a permanent, semi-permanent or seasonal basis.
8. Icebergs of \_\_\_\_\_ (Ice-shelf/Glacier) origin are called tabular bergs as they have vertical sides and horizontal tops.
9. In normal weather conditions, weather observations at sea are made at 0000, 0600, 1200 and 1800 hrs. UTC which are known as \_\_\_\_\_ (Synoptic/Prognostic) hours.

10. Which of the following properties of ocean water affects its density the most?
- a) Salinity
  - b) Temperature
  - c) Depth
  - d) Colour

**Section B**

Answer all five question ( 5 x 2marks = 10 marks)

- 11. With reference to a Tropical Revolving Storm, define the terms Track, Path ?
- 12. What is the cause of Index Error in an Aneroid Barometer?
- 13. Explain Diurnal and Semi diurnal tides?
- 14. Explain with suitable diagram the significance of ITCZ.?
- 15. Explain the formation of Sea Smoke?

**Section C**

**Answer any five out of Seven Questions ( 5 x 10 marks = 50 marks)**

16. Code the following weather report using the Ships Weather Code. (10 marks)

Ship: VHAN, Position: 00deg. 05'N 046deg. 58'E, Course made good in the past three hours: 170deg. at 10 knots,  
GMT 16d 00h 20m, Wind: 052deg. Estimated at 10 knots  
Visibility: 500 meters  
Barometric pressure: 1008.8 mb, Tendency: 0 mb, Barographic trace: \_\_\_\_\_  
Temperature: Dry 28.5 deg. C, Wet 23.0 deg. C, Sea 20.6 deg. C  
Clouds: Total cloud cover: 7 oktas, Low clouds: 4 oktas, base 600 meters above sea, Cu of strong vertical extent, Ac in a chaotic sky, Cc present.  
Present weather: Visibility poor due to dust in suspension in the air, not raised by wind at or near the ship  
Past weather: Thick haze, thunderstorm  
Sea: Period 4 seconds, height 0.5 meters  
Swell: From 270 deg. Period 8 seconds height 4 meters

- 17.
- a) Write a short note on Anti-cyclone and Col. (5 Marks)
  - b) Explain the formation of Katabatic winds. Why are they dangerous to vessels? (5 Marks)

18.

- a) What is a Front? Explain the formation of a cold front and a warm front? (5 Marks)
- b) Explain the classification of air masses? (5 Marks)

19.

- a) Sketch the symbols used on weather charts to indicate:  
i) Warm Front ii) Cold Front iii) Stationary Front iv) Occluded Front (5 Marks)
- b) State the effect of pollution on the formation of Radiation Fog? (5 Marks)

20.

- a) Explain briefly the different types of ice at sea. (5 Marks)
- b) List any ten hazards experienced or general precautions to be taken when navigating in icy waters and extreme cold weather? (5 marks)

21.

- a) Sketch and describe the structure of a Tropical Revolving Storm. (5 marks)
- b) Differentiate between a Tropical Revolving Storm and a Temperate Latitude Depression. (5 Marks)

22.

- a) Write a short note on Spring Tides and Neap Tides. (5 marks)
- b) Sketch and describe the working of a Whirling Psychrometer. (5 marks)

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