

INDIAN MARITIME UNIVERSITY

(A Central University Government of India)

Programme: B.Sc (Nautical Science)

Semester: IV

Subject Name: Meteorology

Subject Code: UG21T4406

Date: 09.06.2022

Max.Marks:70

Time: 3 Hrs.

Pass Marks: 35

Part A – 10 MCQs (10 X 01 Mark)

(1) Which of the following is an example of a Katabatic wind blowing over the Adriatic Sea during winters?

- a. Mistral
- b. Bora
- c. Levanter
- d. Sirocco

(2) Maritime Tropical Air mass is:

- a. Cold and Moist
- b. Warm and Dry
- c. Warm and Moist
- d. Cold and Dry

(3) Identify the Synoptic Hours from the following options.

- a. 0000, 0600, 1200, 1800 hrs Ships Time
- b. 0300, 0900, 1500, 2100 hrs UTC
- c. 0300, 0900, 1500, 2100 hrs Ships Time
- d. 0000, 0600, 1200, 1800 hrs UTC

(4) What are Weather Prognosis Charts?

- a. Charts showing the predicted weather situation for a specified future time
- b. Charts showing the predicted weather situation for the next 72 hours
- c. Charts showing the existing weather situation at the preceding synoptic hour
- d. Charts showing the existing weather situation at the preceding additional synoptic hour

(5) Which type of icebergs have a tabular shape?

- a. Icebergs of ice shelf origin

- b. Icebergs of glacier origin
- c. All icebergs irrespective of their origin
- d. Only icebergs of Arctic origin

(6) Why are TRS unlikely to form during the peak of the monsoon seasons?

- a. Absence of Coriolis force
- b. Presence of strong prevailing winds and absence of low wind shear
- c. Inadequate amount of water vapour
- d. Absence of convection current

(7) Which of the following location has a Gradient current flowing through it?

- a. Singapore Strait
- b. English Channel
- c. Suez Canal
- d. Gibraltar Strait

(8) What is a Tidal Bore or Bore tides?

- a. Tides occurring during the waning phase of the moon
- b. An incoming tide which travels up a river or narrow bay
- c. Tidal wave
- d. Tides occurring during the waxing phase of the moon

(9) How does seawater density vary with depth?

- a. Seawater density increases with depth
- b. Seawater density remains the same irrespective of the depth
- c. Seawater density decreases with depth
- d. Change in seawater density at any place varies with the time of the day

(10) If the pressure indicated by the Aneroid Barometer on the bridge is 996.5 mb & the bridge is 15 m above the sea level, then what is the Atmospheric Pressure at that place?

- a. 999.5mb
- b. 998mb
- c. 1000.5 mb
- d. 995mb

Part B – 5 Short Questions (05 X 02 Marks)

(2a) Sketch the symbols used on weather charts to indicate 1) Warm Front
2) Cold Front 3) Stationary Front 4) Occluded Front.

(2b) State and briefly explain the causes of ocean currents.

(2c) Explain the classification of air masses

(2d) Write a short note on Col.

(2e) With reference to a Tropical Revolving Storm, define the terms Track,
Path, Vertex and Dangerous Quadrant

Part C – 7 Long Questions-Answer Any 5 (05 X 10 Marks)

(3)

(a) Explain the formation of Katabatic winds. Why are they dangerous to
vessels? (5 marks)

(b) Explain the formation of the Southwest and Northeast Monsoons over the
Indian subcontinent. (5 marks)

(4)

(a) What is a Front? Explain the formation of a cold front and a warm front?
(5 marks)

(b) What is a Ridge and the weather associated with it? (5 marks)

(5)

(a) What are the two basic categories of weather facsimile charts? Explain
both the categories. (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)

(6) Encode the following weather report using the Ships Weather Code
1982: (10 marks)

Ship: ATTA, Position: 19deg. 14'N 072deg. 37'E, Course made good in the
past three hours: 142deg. at 13 knots

GMT 24d 12h 04m

Wind: 173deg. Estimated at 15 knots

Visibility: 1000 meters

Atmospheric pressure: 1005.7 mb, Tendency: 0 mb, Barographic trace: ———

Temperature: Dry 28.5 deg. C, Wet 25.0 deg. C, Sea 26.8 deg. C

Clouds: Total cloud cover: 7 oktas, Low clouds: 4 oktas, base 500 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: Dust storm and thick haze

Sea: Period 4 seconds, height 1 meter

Swell: From 240 deg. Period 6 seconds height 3.5 meters

(7)

(a) What are the warning signs of an approaching Tropical Revolving Storm?
(5 marks)

(b) Differentiate between a Tropical Revolving Storm and a Temperate
Latitude Depression. (5 marks)

(8)

(a) What are ocean currents and how are they different from tidal streams?
(5 marks)

(b) What are the effects of ocean currents on climate? (5 marks)

(9)

(a) Explain the formation of Spring Tides and Neap Tides. (5 marks)

(b) What is a Storm Surge and a Tsunami? (5 marks)

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