INDIAN MARITIME UNIVERSITY

Time Bound Assignment September/October 2020

B Sc (NS) Arrear Examinations

Meteorology Paper II
UG21T3406

Date: 12/10/2020	Maximum Marks: 70
Time: 3 Hrs	Pass Marks: 35

Note: Question number One and Two are compulsory.
Attempt any five questions from remaining seven questions.

Q1) **(10 Marks)**

Code the following weather report using the Ships Weather Code 1982:

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.

Q2) Fill in the blanks from the options given in the brackets **(1x10 marks)**

i) A _____ (Ridge/Trough) isobaric pattern indicates an area of high pressure jutting into areas of low pressure.

ii) Katabatic winds blow _____ (up-hill/down-hill) at night.

iii) 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.

iv) In a Tropical Revolving Storm the calm central area of lowest pressure is called the _____ (Vortex/Outer storm area)

v) A Tropical Revolving Storm may cause the water level in coastal areas to rise suddenly leading to a _____ (Storm surge/Tsunami).

vi) The weakening or decay of a frontal depression is called _____ (Frontogenesis/Frontolysis).

vii) An _____ (Ocean current/Tidal Stream) is the general movement of a body of sea-water on a permanent, semi-permanent or seasonal basis.

viii) Icebergs of _____ (Ice-shelf/Glacier) origin are called tabular bergs as they have vertical sides and horizontal tops.

ix) 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.

x) _____ (Nories Tables/Ocean Passages of the World) is one of the important books used for climatological routing.

Q3)

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)**

Q4)

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)**

Q5)

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) What are the two basic categories of weather facsimile charts? Explain both the categories. **(5 marks)**

Q6)

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)**

Q7)

a) Sketch and describe the structure of a Tropical Revolving Storm **(5 marks)**

b) What are the warning signs of an approaching Tropical Revolving Storm **(5 marks)**

Q8)

a) State the action to be taken when the presence of TRS is confirmed. **(5 marks)**

b) Compare a TRS to a Temperate Latitude Depression **(5 marks)**

Q9)

a) Explain what a ship's performance curves are and how are they useful in weather routing? **(5 marks)**

b) What is Optimum Ship Routing? **(5 marks)**

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