Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – December 2023

Programme Name: DNS

Semester: 2

Subject Code: UD11T5201

Subject Name: Navigation III: Navigation and Chartwork

Date: 05.12.2023	Max Marks: 70
Duration: 03 Hours	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.

(ii) Scientific Calculator is permitted.

(iii) (Norrie's Table, Nautical Almanac, permitted)

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each

1. In which volume of Admiralty List of Radio Signals (ALRS) the Information on 'Maritime safety & information System 'is available?
   a. IV b. III
   c. II d. V
2. For the sake of time keeping, world is divided into different "time zones", all of which are having width of longitude as
   a. 15° b.7.5°
   c. 30° d. 12.5
3. Seasons are mainly caused due to –
   a. Elliptical orbit of Earth around sun
   b. Tilt of Earth's axis of rotation with respect to the plane of Ecliptic
   c. Both A & B
   d. None of above
4. The point of intersection of equinoctial and ecliptic when the sun's declination changes from N to S is called _____.
   a. Nadir. b. First point of Libra.
   c. First point of Aries. d. Solstice point
5. During which voyage plan phase the navigating officer plots the track berth to berth on the charts.
   a. Monitoring b. Execution
   c. Appraisal d. Planning
6. Spring tides occur when the ____
   a. Sun & Moon are in conjunction.
   b. Sun and moon are in opposition.
   c. Both, a) & b).
   d. Sun and moon are in quadrature

7. There are ____ usage bands for ENC

a. 3 b. 4

c. 5 d. 6

8. The ENC attribute DATSTA which means Date Start, is encode in the format___.

a. DDMMYY b. MMDDYY

c. CCYYMMDD d. HHDDMMYY

9. Admiralty sailing directions is also referred as

a. Sailing charts b. Routeing charts

c. Pilot books d. Tidal volumes

10. In a PZX Triangle, side PZ is ____

a. Latitude b. Polar Distance

c. Co-Latitude d. Declination

Section B

Five Questions of 02 Marks each.

11. State any two salient features of Great Circle.
12. Briefly state purpose of Safety Contour setting on ECDIS
13. Define Amplitude of a celestial body
14. LMT- 30d 5h 9m 50s and Long- 076°16′ W, Calculate the GMT
15. Draw the symbol for CATZOC-A1 and state the Position and Depth accuracy associated with it.

Section C

Answer all the questions. (10 Marks Each)

16. On 30th April 2008 in DR 00°20′N, 060°12′W, the sextant altitude of Sun's UL East of meridian was 44°13.4′ when the GMT was 13h 00m 52s. If height of eye (HE) was 20m, and IE was 3.1′ off the arc, calculate the direction of the position line (LOP) and the observed longitude. **(10 Marks)**

17. **(2 x 5 Marks)**

a. How will you determine the Safety Depth setting for your vessel?

b. Explain in brief the modes of display – Base, Standard & ALL as per the latest ECDIS performance standards.

18. **(2 x 5 Marks)**

a. While steering a course of 184°(C) Les Hanoi's bore 150°(C) at 2030 Hours. At 2115 Hours the same light bore 106°(C). Find the vessel's position at 2115 Hours. (Given, Var=3°W, Dev=5°E, Speed 16 Knots).

b. Find the height of tide and depth of water at 1430 hours on March 2nd, at a position off Singapore, where charted depth is 4 metres. Extracts from the Tide Tables for the day under reference are given below: -

Time	Height
0014	2.7 m
0603	0.8 m
1209	2.9 m
1830	0.6 m

19. Find Initial Course & Great Circle distance from 35°35'N, 141°42'E to 37°48'N, 123°20'W. **(10 Marks)**

20. **(3 + 7 = 10 Marks)**

a. Find Geographical position of Sun on 29 Feb 2008 at GMT 05h 35m 15s

b. Explain how the durations of day & night depend upon the declination of the sun and latitude of the observer

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