

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2024
Programme Name: DNS
Semester: 2
Subject Code: UD11T5201
Subject Name: Navigation and Chart Work

Date: 27.05.2024

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) all questions compulsory.
- (ii) Non programmable Scientific Calculator is Permitted
- (iii) Norrie's Table/Nautical Almanac permitted
- (iv) English Channel Chart to be provided by the Exam centre

Section A

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

1. The Horizon system of units comprise of

- A LHA ; Dec
- B Dec ; GHA
- C SHA; Dec
- D Alt ; Az

2 If for a celestial body, $GHA = 325^{\circ}$ and $LHA = 55^{\circ}$ then the Observer longitude is _____

- A $90^{\circ}E$
- B $90^{\circ}W$
- C $120^{\circ}W$
- D $110^{\circ}E$

3. Information on 'World's oceans, details of weather, climate, winds, current, swell etc' is given in

- A ALL
- B ALRS
- C ATT
- D Ocean passage for the World

4. The parallel of latitude 23.5°S refers to

- A Antarctic circle
- B Arctic circle
- C Tropic of Capricorn
- D Tropic of Cancer

5. Which is an inferior planet?

- A Saturn
- B Jupiter
- C Mars
- D Venus -

6. If you find a celestial body right at your zenith, then following is true:

- (a) Observer latitude is same as the $90 \pm$ declination of the celestial body at the time it was at zenith.
- (b) Observer longitude is same as the declination of the celestial body at the time it was at zenith.
- (c) Observer position is same as the GP of the celestial body at the time it was at zenith.
- (d) Observer position is same as Declination and SHA of the celestial body.

7. In respect of Vertex of great circle path, following is true:

- (a) It is the point where great circle course is either N or S
- (b) It is the point where great circle is closest to the pole of the hemisphere and course is N or S
- (c) It is the point where great circle course is E or W
- (d) It is the point where great circle crosses equator.

8. Information to contact Mumbai VTS on VHF Channel can be extracted from Nautical Publication:

- (a) ALRS Vol 1
- (b) ALRS Vol 4
- (c) ALRS Vol 2
- (d) ALRS Vol 6

9. When reading an ENC cell Number (8 Character identifier) the third digit represents:

- (a) Producer Code as given in S62
- (b) Permit Number
- (c) Base Cell Number
- (d) Usage Band for Navigation Purpose.

10. In Occulting light the period of brightness is more than period of darkness. (True / False)

Section B

Answer all Five Questions (5x2marks = 10marks)

11. Define Geographical Range of light
12. Define the Ecliptic.
13. Define Local Hour Angle (LHA)
14. Define Amplitude of a celestial body.
15. 02 March 2008 GMT152010. Ship in position $10^{\circ} 45'N$ $084^{\circ} 50' E$. Find LHA of star Capella.

Section C

Answer all five Questions (5x10marks = 50marks)

16. Find the initial course and distance from $69^{\circ} 30.0'N$ $060^{\circ} 50.0'E$ to $44^{\circ} 40.0'N$ $120^{\circ} 20.0'E$ (10marks)
17. (a) What are the IHO Standards S57, S52, and S63? (5 Marks)
(b) Prove the formula, $\text{Sin Amp} = \text{Sin Dec} / \text{Cos lat}$. (5Marks)
18. On 21st Jan 2008 in DR post $24^{\circ} 36S$ $110^{\circ} 20W$ the sextant altitude of the sun LL on the meridian was $85^{\circ} 03.5$. If the IE was 1.6'off the arc and the HE was 10 m, Find the latitude and state the direction of the LOP. (10marks)
19. At 2000Hrs Bill of Portland light bore $045^{\circ}(T)$ and at 2100Hrs the same light bore $309^{\circ}(T)$. Vessel was steering a course of $085^{\circ}(T)$ at engine speed of 11 Kts. Northerly wind was causing a leeway of 5° degrees, current was setting $180^{\circ}(T)$ at 2 kts. Find the CMG & the position of the vessel at 2000Hrs & 2100Hrs. (10Marks)
20. A vessel with even keel draft of 10.0m wants to sail out from Sharjah as soon as after sunrise as possible, Sailing is subjected to enough water at shoal (9.20m) at the entrance of the channel. At least and Under Keel clearance of 1m is required over the shoal, what is the earliest time (LT) at which the vessel can sail on 16 May 2022. (Time Zone -4) Tidal Data for 16th May 2022 as below: (10Marks)

Time	Height (m)
0446	0.6
1058	2.8
1657	0.6
2320	3.0
