Indian Maritime University

(A Central University, Govt of India)

Supplementary Examinations – March/April 2024

Programme Name: B Sc (NS)

Semester: IV

Subject Code: UG21T5401

Subject Name: Celestial Navigation II

Date: 16.03.2024 Max Marks: 70

Duration: 03 Hrs Pass Marks: 35

General Instructions
(i) All Sections (A, B & C) and all the questions are compulsory.
(ii) 2008 Nautical Almanac & Norrie's Nautical Table permitted.
(iii) Scientific Calculators permitted.

Section A

Ten MCQs/Fill in the Blanks – Choose the correct answer as applicable. Answer all the questions

(10x1mark=10 marks)

1.What is the correct sequence of twilights in the morning leading to Sunrise?
a. Astronomical, Nautical, Civil, Sunrise
b. Civil, Nautical, Astronomical, Sunrise
c. Sunrise, Astronomical, Nautical, Civil
d. Sunrise, Civil, Nautical, Astronomical

2. How many Meridian passage will a Circumpolar body have?
a. 1 b. 2
c. 3 d. 4

3. When a ship moves in Westerly direction, ships clocks are _____.
a. Advanced b. Retarded c. maintained same d. Advanced 1 day

4. Rising Amplitude of Sun is E 09 N. What is the true bearing of Sun?
a. 089°T b. 081°T
c. 099°T d. 009°T

5. At Perihelion, Earth is_____ to the Sun in its orbit.
a. Farthest b. Closest c. Halfway d. Quarter

6. Polaris can be seen from latitudes in Southern Hemisphere. True / False.

7. SHA is the_____hour angle measured from First Point of Aries to the celestial meridian passing through the celestial body?
a. Northerly b. Easterly c. Westerly d. Southerly

8. Azimuth is the angle at the _____?
a. Elevated Pole b. Depressed Pole c. Equator d. Zenith

9. Our Solar system belongs to:
a. Milky-Way Galaxy b. Sun Galaxy c. Earth Galaxy d. Galatica

10. On 29th Apr, for an observer in Lat 40 Deg N, Greenwich Meridian, when does Nautical Twilight end?
a. 03 59 b. 04 35 c. 05 04 d. Not Applicable as Twilight All Night

Section B

Answer all Five Questions (5 x 2 marks= 10 marks)

11. What is the relationship between LHA Sun & LAT?

12. Find the SHA and Declination of the star DUBHE on 29th Nov 2008?

13. What is a Circumpolar Body?

14. What is Ex-Meridian method of sight calculations? Explain in brief.

15. Calculate the Sunrise time in GMT for an observer in DR 20°N, 165°E on

12th Oct 2008.

Section C

Answer all Five Questions (5 x 10 marks = 50 marks)

16.(a) What is Zone Time and Standard Time? 5 marks
(b) Explain Geographical Position. 5 marks

17. a. Why do we use Mean Sun for time keeping? 5 marks

b. On 28th Apr 2008, in DR 45 Deg 00 Min N 035 Deg 45 Min W, the Rising Sun bore 080 Deg (C). If Var = 7 Deg W, find the Deviation of the compass at that heading. 5 marks

18.On 29th Nov 2008 in DR 26°27'N 130 °27'W, the sextant altitude of the Sun's UL East of the meridian was 28°11', when the GMT 17h 47m 49s. If HE was 10m and IE was 2.3' off the arc, calculate the direction of the LOP and the intercept? 10 marks

19. On 10th Oct 2008, GMT 07H 48M 25S at ship in DR 36° 45′ S 017°00′ E, the sextant altitude of the Sun's LL was 48°54.5′ (East of Meridian). If IE was 4.2′ OFF the arc & HE was 36 m, find the direction of the LOP and the Longitude where it cuts the DR latitude. (10 marks)

20. On O4th March 2008, DR 27°18′N 168°11′W, the sextant altitude of the Sun's LL near the meridian was 56°19.8′ when GMT 23h 14m 44s. HE was 12m and IE was 2.8′ on the arc, find the direction of the LOP and a position through which it passes? 10 marks

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