

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations –June 26
Programme Name: DNS
Semester: 2
Subject Code: UD11T6204
Subject Name: Celestial Navigation

Date: 04.06.2026

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted All the Questions are compulsory.
- (ii) Use of 2008 Nautical Almanac, Norrie's Table, Non-Programmable Scientific Calculator is permitted.

Section A

Answer All Question Objective Type Questions
(10 x 1 Mark = 10 Marks)

1. In a Rational Horizon diagram, which of the following does Prime Vertical **NOT** pass through?
a. East b. North c. Zenith d. West
2. What is the radius of Celestial Sphere?
a. 100 nm b. 1000 nm c. 1 Light Year d. Infinity
3. Which of the following planets is an INFERIOR planet?
a. Mercury b. Mars c. Jupiter d. Saturn
4. What is the value of eccentricity of earth's orbit around the Sun?
a. Zero b. 0.0167 c. 1.000 d. 23.5
5. Which of the following Sextant Altitude correction is applicable to the Star's altitude?
a. Refraction b. Parallax c. Semi-Diameter d. None of the above.
6. By using a Pick Report in ECDIS, the mariner can read additional quality information on isolated dangers to the safety of navigation and/or survey reliability, if these have been included in the ENC. **True / False.**
7. For an Observer in Southern Hemisphere, **Depressed Pole** is North Pole. **True / False.**
8. If Latitude of an observer is same value and name as the Declination of celestial body, the body would be at Observers Zenith at Upper Meridian Passage the body. **True / False**

9. What is the assumed hourly rate of change of Moon's hour Angle in increment table of Almanac?
 a. 10 Deg 30 min b. 14 Deg 19 Min c. 15 Deg 00 Min d. 15 Deg 30 Min
10. In Nautical Almanac, how frequently is ΔV given for Moon given?
 a. Once in 3 Days b. Once in 2 Days c. One per day d. Every Hour

Section B

Answer all five question (5 x 2 Marks = 10 Marks)

11. Define True altitude of a Celestial Body
12. State Kepler's 1st Law of planetary Motion
13. State the GP of the Moon, when its GHA=242° and Dec22°S
14. Define GMT (Greenwich Mean Time)
15. Describe the conditions for the heavenly bodies to be circumpolar

Section C

Answer all the questions (5 x 10 Marks = 50 marks)

16. a) With a neat sketch describe a Solar Eclipse with Umbra & Penumbra and the condition necessary for occurrence of Total Solar Eclipse. (5 marks)
- b) The Geographical position of star Spica on 23rd Aug 2008 at 18h 17m 19s GMT (5 marks)
17. With Neat Sketch Explain in details about the Seasons, Solstice and Equinoxes. (10marks)
18. In the evening of 23RD sept 2008 05h 21m 08s GMT, a ship in DR long 160 12 W, found the sextant altitude of Polaris to be 36°18.6'. If IE was 2.8' on the arc and HE was 10m, find the direction of the LOP and the latitude where it cuts the DR longitude. If at that time Polaris bore 002 (G), find the Gyro error and state whether it was H or L. (10 marks)
19. On 16 June 2008 in DR position 72 °30' N 038° 45' E, the sextant altitude of the lower limb of the Sun during Meridian passage was 40° 38.6', IE 1.4' Off the arc, height of eye was 8.3 meters. Find the Latitude of the observer and the direction of the position line. (10 Marks)
20. To a stationary observer, an unknown star bore 000°(T) with true altitude 78°12'. After about 12 hours, the same star bore 180°(T) with true altitude 18°54'. Calculate the observer's latitude and the declination of the star. (10 marks)
