# INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

**END SEMESTER EXAMINATIONS –JUNE 2019**

**B.Sc (Nautical Science)**

**Semester-III**

**Celestial Navigation Paper-I**

**(UG21T3301)**

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**Date:08-07-2019** **Maximum Marks:** 70

**Time:** 3Hrs **Pass Marks:** 35

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**Note: Question No. 1 is compulsory.**

**Answer any 6 questions from remaining 8 questions (each of 10 marks).**

**Scientific Calculator is permitted if required.**

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Q1. Define the following: (2x5=10 marks)

a) Vertical Circle
b) Equinox
c) Visible Horizon
d) Aphelion
e) Position Circle

Q2. a) Draw a diagram of Celestial Sphere and mark the following: Celestial Poles, Equinoctial, Ecliptic, First Point of Aries (4 marks)

b) Explain (with diagrams) the relationship between GHA, LHA & Longitude. (6 marks)

Q3. Explain Lunar Eclipse. Elaborate with diagram the conditions required for occurrence of different types of Lunar eclipse. (10 marks)

Q4. With the help of suitable diagrams, explain the various Phases of Moon over a period of Lunar Month. (10 marks)

Q5. a) Explain the concept of 'd' correction in calculation of declination. (5 marks)

b) Write short note on 'Standard Time'. (5 marks)

Q6. On 16th March 2008, the sextant altitude of the Sun's lower limb was 56° 11.4′. If the index error of the sextant was 2.8′ off the arc and the height of eye was 12m, find the true altitude . (10 marks)

Q7. With ref. to Sextant Altitude Correction, write Short Notes on:

a) Parallax b) Refraction c) True Altitude

(3+3+4 = 10 marks)

Q8. Explain with suitable diagram(s): (4+4+2 = 10 marks)

a) Prime Vertical Circle
b) Elevated Pole
c) Zenith

Q9. On 21stJan 2008, in DR 24° 36′ S 110° 20′ W, the sextant meridian altitude of the Sun's LL on the meridian was 85° 03.5′. If IE was 1.6′ off the arc and HE was 10 m, find the latitude and state the direction of the LOP. (10 marks)

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