INDIAN MARITIME UNIVERSITY

(A Central University Government of India)

END SEMESTER EXAMINATIONS-JUNE/JULY 2019

B.SC NAUTICAL SCIENCE

SEMESTER-VI

NAVIGATION PAPER – VI

(CELESTIAL NAVIGATION AND VOYAGE PLANNING)

(UG21T2601)

Date: 22-07-2019 **Maximum Marks: 70**

Duration: 3 hrs. **Pass Marks: 35**

Note: Non Programmable Scientific Calculator is permitted.
Draw Sketches wherever required.
Nautical Almanac 2008 to be used wherever required.

Section – I (Celestial Navigation)

(Question No. 1 is compulsory. Solve any 4 questions from remaining 5 questions.)

Q1. A.) Define the Following:

i. Perihelion (2 marks)
ii. Superior Planet (2 marks)
iii. Circumpolar Bodies (2 marks)

B.) On GMT Sep 13th 2008 – 13h 10m 22s, in DR 23° 21'S 47° 18'W the observed Azimuth of sun was 046°(C). If variation was 3°W, find the deviation of the compass for the ship's head. (4 marks)

Q2. On GMT 30th April 2008 17h 30m 30s, in DR longitude 150°E, the observed altitude of Polaris was 50° 46.8'. If the Height of eye was 14m, find the direction of the LOP and the position through which to draw it. (10 marks)

Q3. On GMT 30th April 13h 00m 52s, in DR 00° 20'N 60°12'W, the sextant altitude of the Sun's UL East of meridian was 44° 13.4'. If IE was 3.1' off the arc and HE was 20m, find the direction of the LOP and the longitude where it cuts the DR Latitude. (10 marks)

Q4. On GMT March 4th, 2008 – 23h 14m 44s, in DR 27° 18'N 168° 11'W, the sextant altitude of the Sun's LL near the meridian was 56° 19.8'. HE = 12m and IE =2.8' on the arc. Find the direction of the LOP and a position through which it passes. (10 marks)

Q5. A.) Explain Twilight. State the condition for 'Twilight all Night'. (5 marks)

B.) The true altitude of a star at upper meridian passage and lower meridian passage were 63° 54' and 16° 50' respectively, to an observer in the northern hemisphere. At both transits, the star bore north. Find his latitude and the declination of the star.

(5 marks)

Q6. Explain Lunar Eclipse. Elaborate with diagram the conditions required for occurrence of different types of Lunar eclipse. (10 marks)

Section – II (Voyage Planning)

(Question No. 7 is compulsory. Solve any 1 question from remaining 2 questions.)

Q7. Find the height of tide off Singapore harbour at 1100 hours on 3rd February. The following extract from the tables for the date under reference is given below:

Extracts from A.T.T.	
Zone Time -0800	
Time (hrs)	Height
0123	2.7m
0703	0.9m
1302	2.9m
1930	0.5m

(10 marks)

Q8. Explain the system of Chart Correction on ships for:

A. Paper Charts (5 marks)

B. Electronic Charts (5 marks)

Q9. Enumerate 10 publications used for passage planning on ships.

(10 marks)