Indian Maritime University

(A Central University, Govt of India)

B Sc (Nautical Science)

May-June 2018 End Semester Examinations

Semester-IV

Navigation Paper-VI (UG21T2601)

Duration:3 Hrs Max Mark:70 Marks

Date: 04.06.2018 Pass Mark:35 Marks

Notes:-

1. Use of non-programmable scientific calculator, Nautical Almanac 2008 and Noorie's Nautical Table are allowed.
2. Candidates must show the complete working (including rough work) and not answers alone.
3. Use diagram/sketches/figures for explanations where appropriate.
4. BA Chart 5049 or equivalent chart to be provided by exam centre.
5. Tidal graph attached.

SECTION – I (CELESTIAL NAVIGATION)

(Questions **No 1 is compulsory**. Attempt any **four** from the remaining. All questions carry equal marks.)

1. a) Define Tropics of Capricorn.
   b) Define Solistices.
   c) Define Perhilion and Aphelion.
   d) On 20thJan 2008, in DR 54º 20'N 046º 27'W, the Sun set bearing 238º (C). Find the compass error and the deviation on the compass head, if the variation was 5º E. (2+2+2+4)Marks

2. On 1st May 2008, in DR Long 179º 58'E, the observed altitude of the Sun's LL on the meridian was 64º 35.9' South of the observer. If the HE was 15 m, find the latitude and LOP. (10 Marks)

3. On a ship in DR 10º 15'S 000º 00', at GMT 31st Aug 15h 10m 10s on, the sextant altitude of Sun's LL was 34º 54.0'. If the IE was 1.5' on the arc and HE was 17 m, find the intercept and the direction of the position line. (10 Marks)

4. In DR 15º 36'S 080º 11'W, on, the sextant meridian altitude near the meridian was 58º 22.6 when the GPS showed 2nd May 17h 37m 48s. If

the IE was 1.6′ on the arc and HE was 15 m, find the Latitude and the direction of the position line. (10 Marks)

5. a) What are the conditions necessary for a body to be circumpolar? (5 Marks)

b) In North Latitude, the meridian altitude of a star were observed as follows:- Upper meridian altitude = 75º 36′ bearing South
Lower meridian altitude = 15º 46′ bearing North
Calculate the declination and latitude of the observer. (5 Marks)

6. Explain with a diagram, Kepler's Laws of Planetary motion. (10 Marks)

SECTION – I (VOYAGE PLANNING)

(QUESTIONS **N0 7** IS COMPULSORY. ATTEMPT ANY **ONE** OF THE REMAINING. ALL QUESTIONS CARRY EQUAL MARKS)

7. Find time when the height of tide at Darwin will be 3.0 m in the afternoon tide on 15th Aug. Extract from A.T.T given below:- (10 Marks)

	TIME	HEIGHT
Darwin 15th Aug	0024	2.7 M
	0614	5.9 M
	1217	1.5 M
	1821	7.0 M

8. Describe the factors to take in account when executing a planned passage. (10 Marks)

9. a.What is the difference between Temporary correction, Preliminary correction and Permanent correction. (6 Marks)

b.List the publications used for voyage planning. (4 Marks)

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