

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)
END SEMESTER EXAMINATIONS - DECEMBER 2018
B. SC (NAUTICAL SCIENCE)
Semester: I
Terrestrial Navigation PAPER – I (UG21T3106)

Date: 09.01.2019

Max. Marks: 70

Time: 3 Hrs.

Pass Marks: 35

Note: **Question Number 1 is Compulsory.**

Answer any 6 from the remaining.

Non Programmable Scientific Calculator is permitted.

Draw Sketches wherever required.

Norie's table and Nautical Almanac is permitted.

1. Define the following: (5x2=10 Marks)
 - a. Prime Meridian.
 - b. Great Circle.
 - c. Statute mile.
 - d. Equator
 - e. Spherical triangle

2.
 - a. Define Variation and Deviation. Is the Variation at a place constant? Explain your answer? (2x5=10 Marks)
 - b. Given Compass error 10°E , Variation 10°W , find the Deviation.

3. Find the Position arrived if the initial position is Latitude $50^{\circ} 00.6' \text{ N}$ Longitude $081^{\circ} 10.4' \text{ W}$ and the Course steered is 132° (T) Distance M 290'. (10 Marks)

4. (a) Explain the Mercator projection. (2x5= Marks)
 (b) The advantages and the disadvantages of a Mercator Chart.
5. Find by Mercator Sailing, the True course and distance:
 From: Latitude $24^{\circ} 00' N$ Longitude $074^{\circ} 15' W$
 To : Latitude $46^{\circ} 00' N$ Longitude $053^{\circ} 45' W$. (10 Marks)
6. Find the Initial Course, Final Course, distance along the Great Circle track.
 From: Latitude $10^{\circ} 00.0' S$ Longitude $150^{\circ} 00.0' W$
 To: Latitude $40^{\circ} 00.0' N$ Longitude $160^{\circ} 00.0' E$. (10 Marks)
7. A vessel sailed from lat $27^{\circ} 12' N$, long $178^{\circ} 42' E$ doing 15kts by engines. She steered $067^{\circ} (C)$, {Dev. $3^{\circ} E$ }, for 10 hours. Course was then altered to $096^{\circ} (C)$ {Dev. $1^{\circ} E$ } and this course was maintained for 8 hours. Thereafter she steered $230^{\circ} (C)$, { Dev. $3^{\circ} W$ } for another 6 hours. Find the position arrived, if she experienced a current setting $324^{\circ} (T)$ at 2.5 knots throughout. Variation $7^{\circ} W$, throughout. (10 Marks)
8. a. Explain in your own words, how the knowledge of the position of the vertex is useful? (5 Marks)
 b. Write short notes on all the major canals of the World. (5 Marks)
9. Find the Initial Course, Final Course, distance along the Composite circle track.
 From: Latitude $45^{\circ} 54.0' S$ Longitude $170^{\circ} 45.0' E$
 To: Latitude $49^{\circ} 06.0' S$ Longitude $075^{\circ} 50.0' W$.
 Max lat $55^{\circ} S$. (10 Marks)
