

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)
