INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

End Semester Examination Dec 2019/Jan 2020

B.Sc. (Nautical Science)

Semester -I

UG21T4106- Terrestrial Navigation

Date: 21.12.2019 **Max Marks: 70**

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

Note: Question No. 1 is compulsory.

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

Scientific Calculator and use of Norie's Table is permitted if required.

Outline of World map to be provided by examination centre.

Q1. Define the following with the help of a neat diagram (2 x 5 =10 marks)

a) Great Circle b) Departure c) Rhumb Line

d) Variation e) Vertex

Q2.Find the Great Circle distance and Initial Course from Vancouver, Canada in position: 49º 12' N, 122º 50' W to Guam13º 30'N, 145º 15' E. (10 marks)

Q3. On 18Feb at 1200 hrs, a survey ship off Vizag in position 17º 40'N, 083º 20'E steered the following courses: (10 marks)

Date	Time	Gyro Co	Log Reading
18 Feb	1200	112 º	000
18 Feb	a/c 1800	195 º	095
19 Feb	a/c 0200	030 º	212
19 Feb	a/c 0700	355 º	287
19 Feb	a/c 1200	045 º	360

Gyro error was 2º High. The current was 120º (T) at 1.5kn throughout. (a/c means altered course). Find the estimated position (EP) at 19thFeb Noon.

Q4. (a) Define the following with the help of a neat diagram: (3 x 2=6 Marks)

1. Prime Meridian 2. Nautical Mile 3. Geographical Mile

(b) Find D'Lat & D'Long when travelling from A to B: (4 marks)

A. 26º 15'S, 154º 45'W B. 26º 15'N, 154º 45'E

Q5. (a) Fill in the blanks in the following table: (2 x 3=6 Marks)

S.No	Compass Co	Dev	Magnetic Co	Var	True Co	Compass Error
1.	009 º	15º W	?	10º E	?	?
2.	298 º	?	315 º	?	301 º	?

(b) Box the Compass from East to South quadrant. (4 Marks)

Q6.(a) Find the position arrived if the starting position is Lat 30° 45.0' N Long 160° 12' E, Course steered is 155° (T) & Distance 250 NM. (5 marks)

(b) A vessel in Lat 30° 45.0' N Long 160° 12' E steers True East for a distance of 312 nm. Find the position arrived. (5 marks)

Q7.(a) Find the value of DMP between the following position:
A: 60°15' N, 060° 22' E to B: 30°25' S, 030° 35'W (2 marks)

(b) Find the course and distance between the positions by Mercator Sailing:
From: Latitude 12° 15' N Long 030° 45' E
To: Latitude 54° 30' N Long 005° 40' W. (8 marks)

Q8. Indicate the following on the World map: (10 marks)

(a) Arctic Ocean (b) Bay of Bengal (c) Japan (d) Mumbai Port
(e) Mediterranean Sea (f) Suez Canal (g) Caribbean Sea
(h) South Atlantic Ocean (i) Magellan Strait (j) Bass Strait.

Q9. A vessel has to sail from Durban, South Africa (29° 51' S, 031° 00' E)to Perth, Australia (Lat 31° 57' S Long 115° 51' E)with Max Limiting Lat of 35°S.Find the Initial Course, Final Course and distance along the Composite circle track. (10 marks)

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