

INDIAN MARITIME UNIVERSITY
 (A Central University Government of India)
 END SEMESTER EXAMINATIONS – DECEMBER 2019
Diploma in Nautical Science
Semester I
UD11T4104: NAVIGATION-I- TERRESTRIAL & CELESTIAL

Date: 12.12.2019

Max. Marks: 70

Time: 2Hrs

Pass Marks: 35

Use BA chart 813(South Coast of Sri Lanka) for chart work. Use selected pages of Nautical Almanac 2008, Noorie's tables and non-programmable type scientific calculator is allowed in the exam hall. Exam centre to supply appropriate 'deviation card' to the candidates

NOTE-Q.NO 1 & 2 are compulsory. Attempt 2 out of remaining three.

Q1) Define the following

(5X1=5 marks)

- a) Prime meridian
- b) Departure
- c) Leeway
- d) Estimated position
- e) Nautical mile.

Q2) a) List the advantages of Mercator sailing over plane sailing. (3 marks)

b) A vessel sails on a course $144^{\circ}(T)$ from latitude $15^{\circ} 40' N$ and makes a d'long of $47^{\circ} 50'$. Find the distance covered and latitude reached. (7 marks)

Q3) a) Describe the limitation of the plane sailing formula. (4 marks)

b) Find the apparent altitude, given : sextant altitude = $56^{\circ} 11.6'$, I.E $2.4'$ Off the arc, height of eye = 16m. (6 marks)

Q4) On 6th march a ship in position $46^{\circ} 36'S$ $175^{\circ} 34' E$ steamed as follows.

Time	Co(c)	dev	L'way	Wind	Speed(Kn)
1200	150°	$5^{\circ} E$	3°	SW X W	8
1600	140°	$4^{\circ} E$	5°	SW	8
2000	120°	$3^{\circ} E$	NIL	SW	7.5
2400	120°	$3^{\circ} E$	NIL	SW	6.5
0400	100°	$1^{\circ} E$	NIL	S	8
0800	095°	NIL	NIL	S	8
1200	095°	NIL	NIL	S	8

Var $10^{\circ} E$ throughout. Find the DR position at noon on 7th march and if the observed position then was $48^{\circ} 14.3'S$ $178^{\circ} 06.5' E$. Find the set and drift of the current.

(10 marks)

- Q5) a) Explain the obliquity of the ecliptic. (5 X 2=10 marks)
b) Your ship sailed from A $24^{\circ} 51'S$ $179^{\circ} 28'E$ to B $24^{\circ}51'S$ $170^{\circ}19'W$.Find the course and distance steamed.

PART B-CHART WORK

NOTE-Q.No.6 is compulsory and carries 5 marks.attempt any three out of remaining four,they carry 10 marks each

- Q6) Draw the following symbols. (5 X 1=5 marks)
- a) Wreck
 - b) Submarine cable
 - c) Buoy
 - d) Lighthouse
 - e) Pilot boarding point.

- Q7) Write short notes on the following. (5 X 2=10 marks)
- a) Admiralty chart catalogue.
 - b) Magnetic north.
 - c) Deviation
 - d) Dead reckoning
 - e) Course made good.

- Q8)A vessel is 4.5M to W of Beruwala point light house, find the position, from this position plot a course to reach 6M to SW of Colombo light. What is the course to steer. (10 marks)

- Q9) Little basses reef light bore $230^{\circ}(T)$ at 1100 hrs while on a course of $195^{\circ}(T)$.at 1130 hrs the same light bore $285^{\circ}(T)$.Find the position at 1130 hrs and also at 1100 hrs. (10 marks)

- Q10)Vessel was sailing from Sangamakanda towards Dondra Pt.Transit bearing of great basses reef Lt and little basses reef light was observed to be $235^{\circ}(C)$.Find the compass error and deviation (variation $4^{\circ} W$). (10 marks)
