INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

December 2016 End Semester Examinations

Diploma in Nautical Science - First Semester (2015 batch onwards)

Navigation- I : Terrestrial & Celestial (UD11T3104)

Date : 17.12.2016 **Maximum Marks: 70**

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

Note: Use BA Chart no 813(South Coast of Sri Lanka) for chart work.
Use of Selected pages of Nautical Almanac 2008, Norie's Tables and Non-programmable type Scientific Calculator is allowed in the Exam Hall.

SECTION- A

Terrestrial Navigation

Note: 1. Q No 1 is compulsory and carries 5 marks.
2. Attempt any 3 out of remaining four, they carry 10 marks each.

1. Find the True Zenith distance of the Sun when the sextant altitude of the Sun's lower limb was 33 ° 41' on 22 February 2008 . IE = - 2.2',HE = 12 m. (5 marks)

2. Write short notes on: (2x5 = 10 Marks)

   (a) Sea Mile
   (b) Obliquity of the Ecliptic
   (c) Difference in Meridional parts
   (d) Parallels of Declination
   (e) True Altitude

3. (a) A ship in position 24° 41' S 177° 50' W, steered along the parallel of latitude westward & covered 400'. What was her final position? (5 Marks)

   (b) A ship in position 03° 25' S 002° 40' W steered 050° and covered a distance of 500'. Find her final position? (5 Marks)

4. (a) A ship departed the position 31°35'S 122 ° 20'W on a rhumb line track & arrived at position 13°22' N 125°40'E . Find the course steered & distance covered. (5 Marks)

(b) Find the true course if the compass course was 324°(C) (variation = 1° W). Also find the true bearing if the compass bearing of a lighthouse observed from the ship steering the compass course 324°(C) was 116° (C) . (5 Marks)

Use the following deviation table:

Ship's head (C)	310 °	320 °	330 °	340 °
Deviation	5 ° W	2 ° W	1 ° E	4 ° E

5. On 15 April 2013 at 1200 h , a ship in position 18 ° 33'N 105° 23' W steered the following courses :-

	Date	Time	Co(Gyro)	Leeway	Wind	Log
	15 April	1200	315 °	3 °	S	0
a/c	15 April	1900	026 °	4 °	E	86
a/c	16 April	0300	135 °	5 °	N	190
	16 April	1200				300

Gyro error was 2 ° high. Find the position at noon on 16 April 13. The current was 240 ° (T) at 2.5 kn throughout. (.a/c means 'Alter course') (10 Marks)

SECTION- B
(Chart work)

Note: 1. Q No 6 is compulsory and carries 5 marks.
2.Attempt any 3 out of remaining four, they carry 10 marks each.

6. Draw the symbols of the following as per NP 5011 (1x5= 5 marks)
   a) Ebb tide stream with rate
   b) Submerged wreck depth known
   c) Established direction of traffic flow
   d) Obstruction, depth known
   e) Sounding of doubtful depth

7. Write short notes on the following: (2x5= 10 marks)
   a) Variation

b) Folios
c) Estimated position
d) Natural scale of chart
e) Fix

8. At 0800 h , from a ship, Little Basses Reef Light VQ(2)10s 34m 27M bore 320 °(T) at 12'.Find the position at 0800 h. From this position a course 240 °(T) was steered. (Ship's speed – 12kn. Current set 180 °(T) @ 2 kn). Estimate the position at 1000 h. Also find CMG .
(10 Marks)

9. At 1100 h a vessel steering 160 °(T) at 10 Kn , observed Beruwala Point Fl 20s 46m 27M on bearing 120 °(T)and at 1200 h the same light house bore 050 °(T).Find the position at 1200 h.
(10 Marks)

10. A ship observed Weligama F.R. 9m 5M & Mirissa Point in transit, bearing 310 °(C) & at the same time the range of the Weligama F.R. 9m 5M was 5'. Find the position of the ship. Find the Compass error & the deviation of the ships head if the variation was 2 ° W.
(10 Marks)

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