INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)

June 2017 End Semester Examinations
Diploma in Nautical Science – First Semester

Navigation I: Terrestrial & Celestial (UD11T 3104)
(August 2015 batch onwards)

Date: 19.06.2017 Maximum Marks : 70
Time: 3 Hrs Pass Marks : 35

Instructions:
i) Use BA Chart 813for Chart work.
ii) Use of Nautical Almanac 2008, Norie's Tables and Non-programmable type Scientific Calculator are allowed.
iii) Exam centers to provide suitable Deviation card to candidates (if required)

SECTION I

Question No 1 is Compulsory. Attempt any three out of the remaining four.

1. The sextant altitude of sun's LL on 15th July 2008 was 30^0 15.6'. find the true zenith Distance at this time considering H.E = 25m and I.E =2.4' off the arc. (5 marks)

2. Define the following term with suitable sketch as required. (10 marks)

   a. Departure
   b. Declination
   c. Ecliptic
   d. Greenwich Hour Angle (GHA)
   e. Prime Vertical

3. a. vessel in lat 45^0 10' S, long 178^0 30' W steered a westerly course for a distance of 250 miles. Find the position arrived assuming NIL effect due to wind and current. (5 marks)

   b. A vessel sailed from position 44^0 11'N and 140^0 20'W with course 056^0 (T) for a distance of 2222 M. Find the position arrived (5 marks)

4. a. Find the Rhumb line course and distance from starting position 06^0 00' N, 079^0 00'W to final position 38^0 00'S, 179^0 00'E, using Mercator sailing. (5 marks)

   b. Jan 20th, 2008 in DR Position 54^0 20' S 04627' W, the setting sun bore 234^0 C. If variation was 3^0W, find the deviation for the ship's head. (5 marks)

5. On 10th July a ship in position $05^0$30' N 060^0 10' E set courses as follows:

Time	Gyro Course	Gyro Error	Speed
1200	150^0C	1^0 High	16 kt
2200	200^0 C	1^0 High	18 kt
0800	260^0 C	NIL	16 kts

A current set the vessel 190^0 (T) at 2.0 knots throughout. Find the estimated. Position at 1200 hours on 11th July. (10 marks)

SECTION II CHART WORK

6. Draw the symbols of the following as per 5011 (5 Marks)

a. Position of tabulated tidal stream data with designation

b. Flood stream (rate 2.5 knots)

c) Wreck which has been swept by wire drag to depth indicated.

d) Anchor berth (with Alphabet or Number)

e) Submarine pipeline (carrying Gas or oil)

7. Write short notes on (10 Marks)

a. Observed position or Fix

b. Small correction

c. Routeing charts

d) Deviation

e) Large Scale chart

8. At 0800 hours, Pte De Galle light house bearing 043 °C (Var 5°W Dev 2°E), Distance 12 miles off. Find Ship's position. From this position, Estimate at 0930 the ship's position, if the vessel steered from 0800 hours, 135 ° (T), Speed 15 Knots, Current 180 ° (T) drift @ 3 Knots. Also find the Course Made good and Speed made good during the period. (10 marks)

9. Great Basses Reef Light bore 030 °at 0900 hours and the same light bore 330° at 1000 hrs. If during this period vessel steered 100 °T and speed of 14 knots. Find Ship's position at 0900 and 1000 hours. (10 marks)

10. A Ship at 0800 hrs is due East of Sangamakanda point ,dist 10 NM off . Find ship's position. Calculate the course to pass Little Basses Reef light 12 NM off. Find the time when ship will be abeam the Little Basses light as also the position when abeam. Ship speed was 14 Knots. (10 marks)