B.Sc. (NAUTICAL SCIENCE)

Term-End Examination

December, 2014

00675

BNA-014 : NAVIGATION – I

(TERRESTRIAL AND CELESTIAL)

Time : 3 hours   *Maximum Marks : 70*

Note : *All questions are compulsory. Use of Nories/Burton's tables and Nautical Almanac is permitted. Use BA Chart 813. Use of non-programmable scientific calculator is allowed.*

SECTION I

1.   Write short notes on the following :   *10*

(a)   Nautical mile

(b)   Departure

(c)   Amplitude

(d)   Standard time

(e)   Sidereal hour angle

2. A vessel in position 60°00'S, 178°48'E started steering a course of 090° $\textcircled{T}$ till she arrived at longitude 179°32'W. Calculate the distance travelled by the vessel.   *5*

3. Find Rhumb Line Course and Distance from 02°50'S, 081°10'W to 38°10'S, 178°00'E.   *5*

4. On 12th June noon, a vessel in position 46°14·6'N, 062°44·4'E set courses as follows :

    12th 1200 = 018° $\textcircled{G}$ × speed 14·5 kts.

    A/C 2000 = 082° $\textcircled{G}$ × speed 15 kts.

    13th A/Co 0400 = 104° $\textcircled{G}$ × speed 16 kts.

    A/Co 0700 = 056° $\textcircled{G}$ × speed 15 kts.

    and continued this till 13th noon. Find DR position on 13th noon. Also find the course and distance made good from noon to noon. (Gyro error : 2° $\textcircled{H}$)   *10*

5. On 14th Oct., 1992, Sextant altitude of Sun's UL was 35°19·1', IE : 1·2' off the ARC, HE : 12·8 m. Calculated True altitude of Sun.   *5*

SECTION II

6. A vessel is steering 150° by Gyro compass which has an error of 2° high. What would be the reading on the Standard Compass if variation is 2° E and deviation is 3·5° W ? 5

7. Identify the following chart symbols : 5

   (a)

   (b) MHWS

   (c) Rep (1983)

   (d) $\dfrac{\bullet}{115}$

   (e)

8. Write short notes on any *two* of the following : 5

   (a) Chart datum

   (b) Natural scale of chart

   (c) Estimated position

9. A vessel in position 06°14·5′N, 079°50′E desires to pass Point De Galle LIGHT HO. 12 NM off. Current is known to be setting 230° (T) × 2·5 kts and SSW'ly wind caused leeway of 3°. Find Gyro Course to steer, if Gyro Error is 1°L and ship's speed 11 kts. 10

10. At 1600 HRS, a vessel on a course of 257° Ⓒ × Speed 12 kts observes Great Basses Reef LT. HO. bearing 318°Ⓒ. At 1700 same LT HO. was bearing 012°Ⓒ. While vessel continued on above course. Current was known to be setting 130°Ⓣ × 3 kts. Find Course and Speed made good and Position at 1700 HRS.

(DEV : 4°W, VAR : 4°W)   *10*