BNA-014

B.Sc. (NAUTICAL SCIENCE)

Term-End Examination

00325

June, 2015

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 and non-programmable scientific calculator.*

SECTION I

1. Define any *five* of the following : 10

    (a) Parallax in Altitude

    (b) D'lat

    (c) Rational Horizon

    (d) Azimuth

    (e) Great Circle

    (f) Prime Vertical

2. A vessel in position 37°12′ N, 013°04′ W proceeds East along same parallel of latitude till she arrives in longitude 005°37′ W. Calculate the distance travelled by her. *10*

3. Find course and distance by Mercator Sailing Formula from 32°29′ S, 064°00′ E to 49°50′ S, 005°15′ E. *10*

4. On 22nd September 1992 at GMT 10 hr 09 m 38 s in DR 18°20′ N, 085°40′ E, the azimuth of setting sun was 265° Ⓒ. If variation was 2° E, calculate the deviation of the compass. *5*

SECTION II

5. Differentiate between Mercator charts and Gnomonic charts.   5

6. (a) At 1100 hrs Hindel Nattu Peak (410) and Dondra Head Lt. Ho. were in transit and distance from Dondra Head Lt. was 15 NM. Find the ship's position.   3

    (b) From 1100 hrs position vessel steered a course of 069° (T), current was known to be setting 088° (T) × 3·5 kts, wind N'ly × leeway 3°. Find CMG, SMG, time and distance off when Great Basses Reef Lt. Ho. will be abeam. Ship' SPD : 14 kts.   7

7. At 1500 hrs, a vessel on a course of 202° (C) × 12·5 kts observes Ratnamala Lt. Ho. bearing 141° (C) and at 1615 hrs. same Lt. Ho. was bearing 073° (C). During this period current was setting 310° (T) × 3 kts. Find ship's position at 1500 hrs. [Dev 10° W, Var : 4° W]   10

8. Define the following :   10
    (a) Transit Bearing
    (b) Estimated Position
    (c) Nautical Mile
    (d) Deviation
    (e) Gyro Compass Error