

B.Sc. (NAUTICAL SCIENCE)**Term-End Examination****December, 2015****BNA-014 : NAVIGATION – I
(TERRESTRIAL AND CELESTIAL)***Time : 3 hours**Maximum Marks : 70*


Note : All questions are compulsory. Use of scientific calculator and Nories/Burtons table, Nautical Almanac is permitted. Use BA Chart 813.


1. Explain the following with diagrams : 8
- (a) Difference of Latitude
 - (b) Variation
 - (c) Great Circle
 - (d) Small Circle
2. (a) A vessel sailed due West for 100 miles along latitude 40°N . Find the difference in longitude. 3
- (b) A vessel sails from position $20^{\circ}15'\text{N}$ $042^{\circ}16'\text{E}$ and arrives in position $24^{\circ}12'\text{N}$ $086^{\circ}14'\text{E}$. Find, by Mercator Sailing, the course and distance made good by the ship. 5


3. (a) Define Zone time. 2
- (b) What is International Date Line ? State its use. 3
- (c) Explain first point of Aries. 3
4. (a) On 5th March 1992, the sextant altitude of Sun's L.L. was 55°30'. Find the true altitude of the Sun, if index error of the sextant was 1' off the arc and height of eye was 13 m. 5
- (b) On 4th May 1992, in position 40°30'N 064°30'E, the rising Sun bore 070° \odot . If variation was 1°W, find the deviation of the compass. 6
5. (a) At 0600 hrs, Great Basses Reef Lt Ho had a vertical sextant angle of 0°07' and a bearing of 320° \odot . Find the ship's position. 6
- (b) From 0600 hrs position, find true course to steer to pass Weligama Lt Ho 20 miles away counteracting a current setting 310° \odot at 3 knots. 6
6. (a) At 0900 hrs, Weligama Lt Ho was bearing 000° \odot and Dondra Head Lt Ho was bearing 033°T. Find the ship's position. 5
- (b) From this position in 6 (a) mentioned above, the vessel steered a course of 285° \odot for 2 hours at a speed of 14 knots. Find the position arrived. 5

7. Write the meaning of the following chart symbols used on metric chart :

5

(a) 

(b) 

(c) 

(d) 

(e) 

8. Define the following :

8

- (a) Natural Scale
- (b) Leeway
- (c) Set and Drift
- (d) Deviation