

B.Sc. (NAUTICAL SCIENCE)

00915 **Term-End Examination**
December, 2014

**BNA-021 : NAVIGATION III (NAVIGATION AND
CHART WORK)**

Time : 3 hours

Maximum Marks : 70

Note : All questions are **compulsory**. Use of non-programmable scientific calculator is permitted. Use BA chart 2675 (English Channel). Tidal curve diagram/graph to be provided by examination center.

1. List the conditions to be satisfied for a Solar Eclipse to take place. 5

2. Explain the terms Conjunction and Opposition of Planets. 5

3. Find the GMT Meridian Passage of Sun for an observer in DR Lat. 12° (S) Long. 085° (W) on 23rd August, 1992. 5

4. In DR $22^{\circ}05'$ (N) $004^{\circ}26'$ (E) on 10th October, 1992 at GMT 0745 hrs, the Sext ALT of Sun's UL was $27^{\circ} 34.5'$. HE 10 m IE 1.5' off the arc. Find the Azimuth and Intercept. 10

5. On 5th March, 1992 at 0938 hrs GMT the Sext ALT of Pole Star was $21^{\circ} 38'$ in DR $22^{\circ} 14'$ (N) $62^{\circ} 02'$ (W). HE 10 m IE 2.5' off. Find the Observed Latitude and Position Line. 10
6. A vessel while steering 087° (C) observes St. Catherine Lighthouse to bear 025° (C) and 45 minutes later the Lt. bears 322° (C). Find the ship's position at second bearing. Var 4° (E) Deviation 2° (W). Current setting 115° (T) at 4 knots. Ship's speed 12 knots. 10
7. A vessel observes horizontal angle between Bishop Rock and Wolf Rock to be 45° and between Wolf Rock and Lizard Point to be 50° . Find the ship's position. 10
8. Find the height of tide at 1000 hrs (Zone time) on 7th February, 1992 at Cherbourg. 10
9. Draw the symbols of the following : 5
- (i) Wreck
 - (ii) Rock
 - (iii) Pilot Boarding Ground
 - (iv) Submarine Cable
 - (v) Nature of Sea Bed (MUD)
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