

B.Sc. (NAUTICAL SCIENCE)**Term-End Examination****December, 2013****BNA-014 : NAVIGATION-I
(TERRESTRIAL AND CELESTIAL)***Time : 3 hours**Maximum Marks : 70*

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- Note :**
- (i) *All questions are **compulsory**.*
 - (ii) *Use B.A. chart 813.*
 - (iii) *Use of Nories Table, Burton's Table and Nautical Almanac is **permitted**.*
 - (iv) *Use of non programmable scientific calculator is **permitted**.*
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SECTION - I

1. Define the following : 5
 - (a) Prime meridian
 - (b) Nautical mile.
 - (c) Parallels of latitude
 - (d) Greate circle
 - (e) Small circle
2. A ship left position Lat $21^{\circ}27' N$ Long $097^{\circ}19'E$ sailed on a course of $163^{\circ} (T)$ for 347 miles. Find the position arrived. 10
3. On 23rd sept 1992, the sextant altitude of sun's Lower Limb was $66^{\circ} 10.6'$. If I.E. was 1.8' off the arc and H.E was 19.5m, find the True Altitude of the sun. 5

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| 4. | (a) | Sketch and describe "AMPLITUDE". | 2 |
| | (b) | Define and explain the use of International Date Line. | 3 |
| 5. | | Define the following : | 5 |
| | (a) | Greenwich Hour Angle | |
| | (b) | Local Hour Angle | |
| | (c) | Sidereal Hour Angle | |
| | (d) | Rational Horizon | |
| | (e) | Zenith. | |
| 6. | | Find GHA and Declination of star ALDEBARAN at 17h 30m 35s GMT on 25 th february 1992. | 5 |

SECTION - II

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| 7. | (a) | Differentiate between "Mercator charts" and Gnomonic charts". | 4 |
| | (b) | (i) Given the ship's Head by compass 312°(c) Var 4°E Dev. 6°W. Find the True course. | 2 |
| | | (ii) Find the compass course to steer, if the True course was 245°(T), Var 3° East and Dev. 2°W. | 2 |
| | (c) | Sketch symbols for the following : | 4 |
| | | (i) Wreck showing part of super structure at chart Datum. | |
| | | (ii) Wreck of which mast is visible at chart datum. | |
| | | (iii) Rock awash at chart Datum | |
| | | (iv) Single point mooring(SPM) | |
| 8. | (a) | Differentiate between "Dr position" and observed position". | 2 |
| | (b) | Distance off a "Light House" gives a "Position" or a "Position Circle"? Explain. | 2 |
| | (c) | Differentiate between "Position" and a "Position Line". | 2 |

- (d) Vertical sextant Angle of point de Galle Lt(Height 28 mtrs) was $0^{\circ}10'$. Find the distance off. 2
9. While on a passage off Sri Lanka Coast, Weligama and Dondra Head Lights were in transit bearing $283^{\circ}(C)$. At the same time, Dondra Head Light was 21 miles off. Find the vessel's position and the compass Error. 5
10. (a) At 1900HRS, Colombo Light bore $013^{\circ}(Gyro)$ and Barbeyrn Light(Near Beruwala point) bore $141^{\circ}(Gyro)$. Find the ship's position. 10
- (b) From the position obtained in (a) Find a course to steer by Gyro so as to pass point de Galle Light 10 miles off counteracting a current setting $230^{\circ}(T)$ at 2.5 Knots. wind WSW Leeway 3° .
(Gyro Error 1° High, ship's speed 11 Knots)
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