B.Sc (NAUTICAL SCIENCE)

00274

Term-End Examination

June, 2010

BNA-014 : NAVIGATION-I
(TERRESTRIAL AND CELESTIAL)

Time : 3 hours   *Maximum Marks : 70*

Note : All questions are compulsory. Use of Nories Or Burton's Tables and Nautical Almanac 1992 is permitted. Use BA chart-813. Non-programmable scientific calculator is allowed.

SECTION - I

1. Define *any two* of the following with sketches   **5** where-possible :

   (a) Declination

   (b) D'lat

   (c) SHA

2. A vessel left a position 01°30' N, 033° 20' W and   **10** sailed on a course of 156° (T) at speed of 17 Kts. While sailing on above course after 24 hrs, her position by GPS was found to be 04° 58' S, 030° 58' W.

   Find set and drift experienced by the ship.

3. Indicate sun's position on observer's rational $\quad$ **10**
horizon sketch at GMT 06^h 30^m 30^s on
25th February 1992 on a ship in DR 35° 30' S,
050° 30' E.

Also find exact LHA and declination of sun at
this time.

4. From following deviation table, find :

(a) True course if compass course is 134°©, $\quad$ **2.5**
VAR : 3°E.

(b) Find compass course if true course is $\quad$ **2.5**
134°Ⓣ, VAR : 3°E

Ship's head by Compass	Deviation
110° ©	5° W
120° ©	3° W
130° ©	Nil
140° ©	3° E
150° ©	4° E
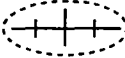
5. Define *any two* of following with sketches : $\quad$ **5**

(a) Parallax in altitude

(b) True Altitude

(c) Dip

SECTION – II

6. Define following : 7.5

    (a) Small scale chart

    (b) Admiralty chart catalogue

    (c) Variation

7. Write the meaning of following chart symbols 7.5
used on metric chart :

    (a)   (b)

    (c)   (d) OIL

    (e)

8. (a) At 1300 hrs Dondra head LT. Ho. and 3
Weligama LT. Ho. were equidistant with
distance of 11.5 NM. Find ship's position
at 1300 hrs.

    (b) From above 1300 hrs position, find Gyro 7
course to steer to pass Galle Lt. Ho. 8 NM
OFF, counteracting a current setting 270°
(T) × 3 Kts.

Also find time and bearing when Galle Lt. Ho.
will be abeam [GE : 2° L, Ship's spd: 16 Kts].

9. (a) At 0900 hrs Barberyn Lt. Ho. and Hiniduma 5
Kanda Peak were in transit bearing 113° ©.
At same time distance from Barberyn Lt.
Ho. was 10 NM. Find Gyro compass error
and Ship's position.

(b) From 0900 hrs position as in (a), find Gyro 5
course to streer to pass Colombo SBM
(Fl 10ˢ) 10 NM OFF. Current Expected in
this area 060° ⓉＴ at 2 Kts, wind W'ly and
leeway 4°. [Ship's speed : 12 Kts]

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