DIPLOMA IN NAUTICAL SCIENCE

Term-End Examination

June, 2007

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

Time : 2 hours *Maximum Marks : 70*

Note : *All questions are **compulsory**. Use Noorie's Tables and Nautical Almanac, where required. Use Chart BA 813. Non-programmable scientific calculator is allowed.*

SECTION I

1. Define the following : *10*

(i) D'Lat

(ii) Zenith

(iii) Prime Meridian

(iv) Equinoctial

(v) Ecliptic

2. A ship leaves a port at 1100 local time on 10th January (ZT : — 0530). She has to reach next port covering 2915 miles. Find her ETA (estimated time of arrival) in local time (ZT : + 0300) taking her average speed : 14 KTS. *5*

3. On 1st September 1992 in DR 23° 18′ N, 165° 02′ E Rising Sun Bore 070° (C). If variation was 5° E, find deviation of the compass. *5*

4. Vessel departed from 05° 05′ N, 080° 10′ E. She sailed on a course of 171° (T) at speed of 15 KTS. Find her position after 24 hrs. *5*

5. (i) Find LHA of Venus on 28th April 1992 at 12 H 32 M 15 S IST in position 22° 39′ N, 069° 51′ E. *3*

(ii) Given Departure Latitude 12° 10′ S, Mean Lat : 01° 10′ N. Find Arrival Latitude. *2*

6. Find True Altitude and True Zenith Distance of Sun if its Sextant Altitude of LL was 75° 01·7′ on 4th May 1992. (HE : 20 meters, IE : 3·2′ off the arc). *5*

SECTION II

7. (a) Define the following : 6

(i) Vertical Sextant Angle

(ii) Deviation

(iii) Tidal Stream

(b) Draw chart symbols of the following : 4

(i) Underwater wreck dangerous for surface navigation

(ii) Anchorage Area

(iii) Pilot Boarding Point

(iv) Submarine Cable

8. From the following Deviation Table calculate : 5

(a) True Course if Compass Course is 222° (C), VAR : 3° W

(b) Compass Course if True Course is 222° (T), VAR : 3° W

Ship's Head	Dev.
210° (C)	11° E
220° (C)	09° E
230° (C)	08° E
240° (C)	06° E

9. While on a course of 301° (C), VAR 3° W, DEV 8° E, Galle Lt. Ho. Bore 000° (C) at 1200 hrs. at 1306 same Lt. Ho. Bore 090° (C), vessel still on same course. During above period current was setting 220° (T) at 1·5 KTS, Wind N'ly with Leeway 2°. Find ship's position at 1306, SMG and CMG. (Ship's Engine Speed 11 KTS) *10*

10. At 0900 hrs. HSA between Colombo Lt. Ho. and Moratuwa Water Tower was 60° and at same time VSA of Colombo Lt. Ho. was 0° 07′ (IE : 0° 2′ on the arc). Find ship's position at 0900 hrs.
(Height of Colombo Lt. Ho. to be taken from chart.) *10*