

## DIPLOMA IN NAUTICAL SCIENCE

### Term-End Examination

December, 2006

### BNA-021 : NAVIGATION III

Time : 2 hours

Maximum Marks : 70

**Note :** All questions are **compulsory**. For chart work, use English Channel Chart No. 2675. Deviation curve diagram to be provided by institute. Use of Noorie's Table and Nautical Almanac is allowed.

#### SECTION A

#### (Navigation)

1. On 1<sup>st</sup> September 1992, at ship in DR Equator  $50^{\circ} 37' E$ , the sextant meridian altitude of the sun's U.L. was  $82^{\circ} 15.4'$ . If I.E. was  $2.4'$  on the arc and H.E. was 17 m, find the latitude and state the direction of P.L. 10
2. On 24<sup>th</sup> February 1992, PM at ship in DR  $41^{\circ} 05' S$ ,  $151^{\circ} 10' W$ , the sextant altitude of sun's L.L. was  $15^{\circ} 12.6'$  at GMT 03 h 29 m 47 s. Find the direction of P.L. and longitude of the point where P.L. cuts the DR latitude. Given I.E.  $1.4'$  off the arc, H.E. = 13.0 m. 15

3. Define Local Mean Time. How is it different from Zone time and Standard time ?

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**OR**

Enumerate the advantages and disadvantages of electronic charts over paper charts.

**SECTION B**

**(Chart Work)**

4. (a) At 1530 hrs., while heading  $200^\circ$  (C) St. Catherine Point Lt. Ho. bore  $315^\circ$  (C) and Nob tower bore  $027^\circ$  (C). Find the ship's position. (Deviation  $10^\circ$  W) 5
- (b) From the position obtained at 1530 hrs., find a compass course to steer to pass Start Point Lt. Ho. 7 miles off to starboard, counteracting a current setting  $155^\circ$  (M) at 4 kts. Wind North, leeway  $3^\circ$ . 5
- (c) Find the time when Bill of Portland light will be abeam. (Engine speed 13 kts. variation  $5^\circ$  E).  
Extract from deviation table : 5

Compass Heading	Deviation
$260^\circ$	$0.5^\circ$ E
$270^\circ$	$2.0^\circ$ E
$280^\circ$	$3.5^\circ$ E

5. At 1100 hrs. the following compass bearings were obtained :

Casquets Lt. Ho. bore  $234^\circ$  (C)

Alderney Lt. Ho. bore  $179^\circ$  (C)

C. de La Hague Lt. Ho. (Fl 18 M) bore  $131^\circ$  (C)

Find the ship's position at 1100 hrs. and also the compass error.

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6. Find the height of tide at 0920 hrs ship's time off Golden Gate on 23<sup>rd</sup> June. The extracts from A.T.T. for the day is given below :

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	Time Zone + 0800	
	Time	Height
	0342	— 0.1 m
23	1042	1.2 m
FRI	1428	0.9 m
	2101	1.8 m