

**INDIAN MARITIME UNIVERSITY**  
(A Central University, Government of India)

**End Semester Examination December 2017**

**Programme Name:** B.Sc (Nautical Science)

**Semester:** II

**Subject Name:** Navigation

**Subject Code:** UG21T2207

**Date:** 30.12.2017

**Maximum Marks:** 70

**Time:** 3Hrs

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**NOTE:**

1. Answer any seven question out of nine. All carry equal marks 10.
2. Use of non-programmable scientific calculator, nautical almanac and Nories table are allowed.
3. Candidates must show complete working (including rough work) not answers alone.
4. Use diagrams/ sketches/figures for explanation where appropriate.

**Part-A (TERRESTRIAL NAVIGATION)**

**Answer any three questions out of four:**

1. (a) Define: i) Position Line ii) Position Circle  
b) How will you obtain the position with the help of position line/ position circle.  
c) Write short note on: a) Dead reckoning position b) Estimated position.
2. On 16<sup>th</sup> Jan a ship in position 00°10'N 68°09'E set course as follows

TIME	Co(C)	Deviation	Variation	Leeway	Wind	Log
1200	126°	2°E	4°E	3°	SW	0
a/c 1800	149°	3°E	4°E	2°	NE	91
a/c 2300	210°	1°W	5°E	3°	SE	167
a/c 0700	240°	2°W	5°E	NIL	W	298
a/c 1200	270°	NIL	4°E	3°	N	376

Clocks were retarded half hour at 0200. An estimated current set the vessel 183°(T) at 1.5 knots throughout. Find i) the DR next noon ii) the EP next noon. If the noon position on 17<sup>th</sup> was 04°54'S 66°56'E, find iii) set & rate of current; iv) course & distance MG; v) state the entry be made in the logbook regarding Co & speed MG noon to noon.

3. (a) Write short note on principle of SEXTANT (b) What are the various errors of SEXTANT?
4. Correct the following sextant altitude and find true altitude by applying each correction separately.  
i) On 14th sept 2008 the sextant altitude of the Sun's UL was 70°29.8'. if IE was 3.2' off the arc and HE was 14m  
ii) On 1st dec 2008 the sextant meridian altitude of the star PROCYON was 39°28.8'. if IE was 1.5' off the arc and HE was 25m .

**SECTION:-B VOYAGE PLANNING**

**NOTE:- Question No. 5 is compulsory.**

Answer any 3 QUESTIONS out of remaining 4 questions.ALL carry equal marks.

5. a) Define: i) Geographical range ii) Nominal range iii) Luminous range  
(b) Elaborate use of i) Sector lights ii) Leading light for safe navigation in harbour with sketch.
6. a) Write notes on i) Chart folio system ii) Chart correction log (NP 131) iii) Chart Corrections.  
b) Describe the procedures for correction of charts.
7. a) For a vessel at anchor, the following compass bearings were observed:-  
Needles Pt. Lt. ho bore  $345^{\circ}$  (C)  
St catherine pt. Lt.ho. bore  $015^{\circ}$ (C)  
Nab tower bore  $039^{\circ}$  (C)  
Find the ship's position and the deviation of the compass for the ship's head, if Variation at that place was  $7.5^{\circ}$ W?
8. a) At 1800 hrs ship steering  $050^{\circ}$  (C) Casquetes Lt ho bore  $200^{\circ}$  (T) and alderney Lt Ho bore  $149^{\circ}$  (T). Find the ship's position.  
b) From the position at 1800 hrs , find the true course to a position with Pt De barfleur Lt ho . bearing  $180^{\circ}$  (T), distance 10 miles off.  
c) From 1800 hrs position, find the true course to steer so as to make good the course as found in section (b) counteracting the current which was known to be setting  $245^{\circ}$  (T) at 3 knots, ship's engine speed being 10 knots.
- 9 a) What are nautical publications used on ship?  
b) How will you keep nautical publications upto date?

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