Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – December 2022

Programme Name: DNS

Semester: I

Subject Code: UD11T5104

Subject Name: NAVIGATION & CHARWORK

Date: 28.12.2022	Max Marks: 70
Duration: 03 Hours	Pass Marks: 35

General Instructions

(i) All Sections (A, B & C) are to be attempted.
(ii) Scientific Calculator is permitted.
(iii) Use of Norrie's Table, Nautical Almanac permitted.
(iv) Chart – South Coast of Sri Lanka will be issued by the respective institute.

Section A

Choose the correct answer.....(1 mark each)

1. A parallel of latitude is a ..... circle (Great / Small)
2. Suez Canal connects Red sea with... (Black sea/ Mediterranean/ Gulf of Aden)
3. In Parallel sailing formula departure= Distance. (T/F)
4. Mercator charts are normally made for latitudes higher than 70° (T/F)
5. Leeway is allowed to correct the set due to current (T/F)
6. Obliquity of the ecliptic is (an angle/ circle/ straight line)
7. The plane of sensible horizon passes through (observer's eye/ Center of the earth/ observer's zenith)
8. To correct compass course, Easterly error is to be (added/ subtracted)
9. Beam bearing = Ships' heading +/- 90°(T/F)
10. Course is measured from North in ..... (clockwise/ anticlockwise) sense.

Section B

SHORT ANSWER TYPE QUESTIONS .....(2 marks each)

11. With a simple sketch show Difference of latitude and difference of longitude.
12. Calculate the distance between 18°24'N 042°12' E and 18°24'N 055° 42' E
13. List two disadvantages of a Mercator chart
14. Compass course 359°, Variation 4.5° W, deviation 2° E. Find true course.
15. List the corrections with signs, to be applied to Sun's sextant altitude to obtain true altitude.

Section C

Answer all the questions. (10 Marks Each)

16. (a): Find Course and distance bewteen P: 36 deg 11.7' N, 075 deg 12.6' E & Q: 40 deg 18.6'N 080 deg 11.5'E (5 marks)

(b): Given Sextant Altitude of Sun: 54 deg 15.0', Index error of sextant: 0.8' (Off the arc), Height of eye of observer: 15 m, Date: 27th April 2008. Calculate True Zenith Distance by applying individual corrections. (5 marks)

17. a. Compare Mercator Sailing with Plane sailing.
b. A ship sails from 11°36'S 176° 54'W to 06°18'N 138° 18W. Find the course and distance.

18. a. On the 28th of May 2008, the sextant altitude of Sun's lower limb was 38° 11.6'. Index error was 2.8' off the arc and HE was 12.3 m. Find the true zenith distance (TZD).
b. Write a short note on Mercator and Gnomonic projections

19. While Steering a Course of 090 deg (T) , Dondra Head light House bore 030 deg(T) at 2200hrs and the same Light bore 320 deg (T) at 2300hrs. Find ships position at 2200hrs & 2300hrs. (10 marks)

20 Write short notes on (2 x 5 = 10 Marks)

a) Estimated position
b) Temporary correction
c) Ocean charts
d) Deviation
e) Dead Reckoning

EXAMS

From: Principal TMI <principal@tmi.tolani.edu>
Sent: 28 December 2022 10:20
To: TMI Exam Dept
Subject: Fwd: DNS - 28.12.2022 - FN - UD11T5104 - Navigation & Chartwork - Clarifications - Reg.

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From: **ESE IMU HQ** <imuese@imu.ac.in>
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To: ESE IMU HQ <imuese@imu.ac.in>

Sir/Madam,

With reference to the DNS - UD11T5104 the following clarifications are issued:

Section C

Q No 16 (b) - Given Sextant Altitude of Sun's **Lower Limb**: 54 deg 15.0', Index error of sextant: 0.8' (Off the arc), Height of eye of observer: 15 m, Date: 27th April 2008. Calculate True Zenith Distance by applying individual corrections.

Q No 19 - While Steering a Course of 090 deg (T) , Dondra Head lighthouse bore 030 deg(T) at 2200hrs and the same Light bore 320 deg (T) at 2300hrs. Find ships position at 2200hrs & 2300hrs. (10 marks). **The speed of the ship is 8 kts.**

Thanks & Regards,

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