

INDIAN MARITIME UNIVERSITY
 (A Central University Government of India)
 END SEMESTER EXAMINATIONS-June/July 2019
B.Sc Nautical Science
Semester-V
Terrestrial Navigation & Voyage Planning
(UG21T2501)

Date: 22-07-2019

Maximum Marks: 70

Duration: 3 hrs.

Pass Marks: 35

Note:

Use BA English Channel Chart.

Use of Noorie's table & Non-Programmable Scientific Calculator Permitted.

Answer any 7 questions. All Questions carry equal marks.

1. a) Ship A in latitude 42°S steers due West at 20 knots. Ship B in latitude 30°S also steers due West. They commenced from the same longitude. IF after 24 hours, they remained due North & South of each other, Calculate B's Speed. (5 marks)

b) Explain 'Gnomonic Charts'. (5 marks)

2. Two ships start from the same point in the Northern Hemisphere. While the first ship steered $030^{\circ}(\text{T})$ at 10kts., the second steered $000^{\circ}(\text{T})$ at 12 kts. for 2 hours and then altered course $090^{\circ}(\text{T})$. Calculate the distance between two ships, 6 hours after starting. (10 marks)

3. Find the initial & final courses and the great circle distance from A to B.

Position A	Position B
$24^{\circ} 00' \text{ N}$	$46^{\circ} 00' \text{ N}$
$74^{\circ} 15' \text{ W}$	$53^{\circ} 45' \text{ W}$

(10 marks)

4. On 14th Sep. a ship in position $40^{\circ}12' \text{ N } 76^{\circ}46' \text{ W}$ steamed as follows:

Time	Co (C)	Deviation	Variation	Speed
1200 (14 th)	249°	3°W	6°W	16 kts
1600	287°	2°E	6°W	14 kts
2200	349°	4°W	5°W	14 kts
0600	273°	2°E	5°W	15 kts
1200 (15 th)	289°	3°E	4°W	16 kts

An estimated current was setting at $027^{\circ}(\text{T})$ at 2 kts throughout the day. Find the estimated position of 15th Noon. (10 marks)

5. Writ short notes on following: (4 +3 +3 = 10 marks)
- Admiralty Sailing Directions
 - Ocean Passages of the world
 - Mariner's Handbook
6. From a vessel at anchor, the following compass bearings were observed:
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Needles Point Lt. Ho bore 345° (C)
St. Catherine Pt. Lt. Ho. bore 015° (C)
Nab Tower bore 039° (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°W. (10 marks)
7. A ship steering 115° (C) at 12 knots. At 1930 hrs Pte. De Barfleur Lt. bore 174° (C) and at 2030 hrs. Pte De Barfleur Lt. bore 238° (C). During the time the current was setting 208° (T) at 2.5 knots. Wind North. Leeway 3°. Find the ship's position at 2030 hrs. (Variation 8°W)
Extract of Deviation Card of Ship

Ship's Head by Compass	Deviation
80°	12.5°W
90°	12.5°W
100°	11.5°W
110°	10.5°W
120°	9.0°W

(10 marks)

8. a) At 1700 hrs. Dungeness Lt. Ho. bore 270° (T) and S. Foreland Lt. Ho. bore 031° (T). Find the Ship's Position.
b) The vessel then steered 225° (C). At 1900 hrs. Royal Sovereign Lt. Vessel bore 257° (C) and Dungeness Lt. bore 037° (C). Find the ship's position.
c) Find the Set and drift of the current, if the ship's speed was 13 knots.
d) Also Find the Course and Speed made Good.
(Variation 4°W; Deviation Card Extract from the Ship below)

Ship's Head by Compass	Deviation
200°	5°E
210°	7°E
220°	8.5°E
230°	10°E
240°	11°E
250°	12°E
260°	13°E
270°	12.5°E

(10 marks)

9. a) At 0200 hrs a vessel steering 243° (C), Anvil Point Lt. bore 045°(C), Bill of Portland Lt. bore 305° (C). Find the Ship's position.
 b) From the positin obtained in (a) find the compass course to steer and adjust engine speed so as to reach Deep Sea Pilot Station off Berry Head Lt. at 0630 hrs. with current setting 168° (T) at the rate of 2 knots.
 c) Find the time and distance off Bill of Portland Lt. when abeam (Variation 8°W; Extract of Deviation card of the ship as per below)

Ship's Head by Compass	Deviation
200°	5°E
210°	7°E
220°	8.5°E
230°	10°E
240°	11°E
250°	12°E
260°	13°E
270°	12.5°E
280°	11.5°E
290°	10°E
300°	8°E

End