

Candidate's Name:

Ports and Maritime Organization
Seafarer's Examination and Documents Directorate

Exams Code: CMCN - 936

Subject: Terrestrial and Coastal Navigation

Date: 139 3.09 .10

Rank : Chief Mate (GT≥3000)

Time allowed: 2.5 Hrs

*Use deviation card No: 1, tide table 2000, chart No: 1121, Nories table, and variation as per chart.
Positions in the brackets are only for guidance and should not be used as actual position of symbols.*

(Pass marks 70)

Q.1) - At 1800 hrs, from a vessel steering 010° (C), Calf of Man Lighthouse ($54^{\circ} 3.4' \text{ N } 004^{\circ} 50' \text{ W}$) bore 055° (C). At 1840 hrs, it bore 087° (C), and the distance off by vertical sextant angle was found to be 14 miles. At 1930 hrs, the same light bore 148° (C). The tidal stream was known to set 045° T, at 3 knots. Require the speed of the vessel, the position at 1930 hrs, and the course made good.
(20 Marks)

Q.2) - In hazy weather a vessel in a position with Tuskar Rock Lighthouse ($52^{\circ} 12' \text{ N } 006^{\circ} 12' \text{ W}$) bearing 270° T, distant 10 miles, and steaming at a reduced speed of 8 knots, set a course to reach a position with S. Stack Lighthouse ($53^{\circ} 18' \text{ N } 004^{\circ} 42' \text{ W}$) bearing 180° (T), distant 8 miles. Two and a half hours later the weather cleared, speed was increased to 16 knots and course altered accordingly. The tidal stream was known to set 000° T, at 2 knots. Find the compass courses steered and the time taken to bring Bardsey I. Lighthouse ($52^{\circ} 45' \text{ N } 004^{\circ} 47' \text{ W}$) abeam.
(20 Marks)

Q.3) - At 0530 hours in DR position $54^{\circ} 26' \text{ N } 005^{\circ} 09' \text{ W}$ the relative bearing of SOUTH ROCK Lt ($54^{\circ} 24' \text{ N } 005^{\circ} 21' \text{ W}$) was 065° . The ship was steering 210° C speed 16 kts, and at 0845 hours ROCK A BILL Lt. ($53^{\circ} 36' \text{ N } 006^{\circ} 00' \text{ W}$) bore 255° C. Find the latitude and longitude of the position at 0845 hours, and the time and distance off when beam of CALF OF MAN Lt. Fl. 15s 28M ($54^{\circ} 03.5' \text{ N } 004^{\circ} 50' \text{ W}$), If a tidal stream set 065° T at 2 knots and a westerly wind was causing 5° leeway throughout.
(20 Marks)

Q.4) - A vessel intends to sail out **Hastings** (ATT vol.1) on 8th March 2000 with a draft of 7.5 m forward and 8.5 meter aft. Calculate the Latest time, when she can cross a bar at the entrance where the charted depth is 6.0 meters, with a clearance of 1.0 meter.
(20 Marks)

Q.5) - Compare the Great Circle and Rhumb line distance between the following positions:

From **A**: $38^{\circ} 00' \text{ N}, 123^{\circ} 30' \text{ W}$

To **B**: $34^{\circ} 40' \text{ N}, 139^{\circ} 54' \text{ E}$

(20 Marks)