

Candidate's Name:

**Ports and Maritime Organization**  
**Seafarers' Examination and Documents Directorate**

**Exams Code: CMCN - 938**

**Subject: Terrestrial and Coastal Navigation**

**Date: 139 3.11.27**

**Rank : Chief Mate (GT≥3000 )**

**Time allowed: 2.5 Hrs**

*Use deviation card No: 1, tide table 2000, chart No: 2837, 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.*

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**(Pass marks 70)**

- Q.1)** - A vessel in position by D.R. Lat.  $25^{\circ} 00' N$ , Long.  $054^{\circ} 00' E$ , observes the altitude of a planet bearing  $050^{\circ} T$ . and finds the Longitude by observation to be  $054^{\circ} 10' E$ .  
She then steers  $320^{\circ} T$  for 2 hrs at 18 knots, through a current setting  $270^{\circ} T$  at 4 knots, when the latitude by meridian altitude of a star is found to be  $25^{\circ} 40' N$ .  
Find the position of the vessel when the Latitude was determined. **(20 Marks)**
- Q.2)** - From a position Lat:  $26^{\circ} 00' N$ , Long:  $054^{\circ} 00' E$ , set a course to steer by compass to reach a position denoted by "Jazireh-ye Forur" Light ( $26^{\circ} 17' N$   $054^{\circ} 30' E$ ) bore  $305^{\circ} T$ , and "Jazireh-ye Sirri" light ( $25^{\circ} 54' N$   $054^{\circ} 33' E$ ) bore  $240^{\circ} T$ . Take into account the effect of the tidal stream estimated to set  $040^{\circ} T$  at 5 knots, and make  $10^{\circ}$  allowances for leeway due to a strong Southerly wind, the vessel steaming 20 knots.  
Find also distance off when "Jazireh-ye Sirri" Lighthouse is abeam. **(20 Marks)**
- Q.3)** - From a vessel steering  $280^{\circ} C$  and steaming 14 knots, "Jazireh-ye Lavan" Lighthouse ( $26^{\circ} 48.5' N$   $053^{\circ} 19' E$ ) was observed to bear  $160^{\circ} C$ . Four hours later "Ras-e Nay Band" Lighthouse ( $27^{\circ} 23.5' N$   $052^{\circ} 35' E$ ) bore  $030^{\circ} C$ . The vessel was making  $5^{\circ}$  of leeway on account of a strong Southwesterly wind and the tidal stream was known to be setting  $270^{\circ} T$  at 2 knots. Require the position of the vessel when the first and second bearing was taken. **(20 Marks)**
- Q.4)** - A vessel intends to sail out of Bowling (ATT Vol 1) on **17th May 2000** with a draught of **9.0** meters forward and **11.0** meters aft. Calculate the earliest time - **During daylight** - when she can cross a bar at the entrance where the charted depth is **10** meters, with a clearance of **1** meter. **(20 Marks)**
- Q.5)** - Your 3000 TEU's Container Vessel is to make a voyage from San Francisco ( $38^{\circ} 00' N$ ,  $123^{\circ} 30' W$ ) to Yokohama ( $34^{\circ} 40' N$ ,  $139^{\circ} 54' E$ ), Calculate direct great circle distance and most direct Rhumb line that stays within the Summer load line limit at all times. **(20 Marks)**