Candidate's Name:

Ports and Maritime Organization ***(95)***
Seafarers' Examination and Certification Directorate

Exams Code : CMCN – 934(95)

Subject: Terrestrial and Coastal Navigation & Nav Aid **Date: 1393.06.24**
Rank : Chief Mate (GT≥3000) **Time allowed: 3.0 Hrs**

Use deviation card no1, 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.

Part (A) : Total marks (70 **Marks) - (Pass marks** 45**)**

Q.1) - At **0500** hours, a vessel in DR position, Lat **52**º **55**´ N, Long **005**º **10**´ W, steering **075** º T at **8** knots through a current setting **000** º T at **3** knots and allowing **8** º leeway due to SE'ly wind, "BARDSEY Island" Lighthouse (**52° 46**' N, **004° 48**' W) bore **130** º T. vessel intend to proceed to a position **5** miles East of "ROCK A BILL" (**53° 36**'N, **006° 00**'W) Lighthouse. What single alteration of course should be made and when should it be made, in order to reach the position off "ROCK A BILL", the ship's speed and the direction and rate of the current are being unaltered. **(20 M)**

Q.2) - A vessel is steering **045**º (T) at **15** Knots, observe "Tuskar rock" light house (**52**º **12**´ N **006**º **12**´ W) bearing **010**º (T). After steaming for three hours, same light house bore **260**º (T).

a) - Find the ship's position at the time of second observation allowing for a current setting **125**º (T) at **2** knots and allowing for **10**º leeway due to a strong North Easterly gale. **(10 M)**

b) - What would be the **bearing and distance** of the vessel from the light house;

i) - At the time of the beam bearing of the light house. **(5M)**

ii) - At the time of the nearest approach to the light house. **(5M)**

Q.3) - A lighthouse off **Tilbury** (England) has charted height of 15 m. Find its height above water level at 11:30 GMT on 1st September for use with a vertical sextant angle? **(15 M)**

Q.4**) - a) -** Find the **Great Circle** distance, and the initial course between the following positions;

A : **41 40** S **175 25** E
B : **07 00** N **080 50** W

(15**M)**

Part (B) : (total marks 30 Marks) – (Pass mark 15)

Q.5) -Explain following in **Magnetic Compass**;

a) - Importance of keeping a record of observed deviation**.** **(7M)**

b) - Operational checks for magnetic compass and its performance. **(7M)**

Q.6) - Describe the function and usage of the following controls on an **auto-pilot**;

i) - Rudder **ii) -**Yaw **iii) -** Non-follow up **iv) -** Rudder limit

(4 Marks each)