



**MERCHANT SHIPPING SECRETARIAT**  
**GOVERNMENT OF SRI LANKA**  
**CERTIFICATE OF COMPETENCY EXAMINATION**

GRADE : CHIEF MATE ON SHIPS OF 500 GT OR MORE (UNLIMITED)  
SUBJECT : Meteorology  
DATE : 26.04.2023

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Time allowed **THREE** hours Total marks : 180  
**ANSWER ALL QUESTIONS** Pass marks : 50%

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Formulae and all intermediate steps taken in reaching your answer should be clearly shown. You may draw sketches wherever required. Electronic devices capable of storing and retrieving are **NOT** allowed.

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- 1) Write short notes on following:
  - a) Ice found near New Foundland
  - b) International Ice Patrol
  - c) Multiyear Pack Ice
  - d) Ice Limits in North Pacific
  - e) Tabular type Ice bergs

(06 marks each)
  
- 2)
  - a) Describe Buys Ballot law. (05 marks)
  - b) Explain why it should not be used in certain places. (05 marks)
  - c) Explain with reasons how you use Buys Ballot Law to find the direction of the centre of a TRS. (20 marks)
  
- 3)
  - a) A vessel trading in North Atlantic received a weather analysis chart (weather analysis chart is provided) and at the time of receiving it, the position of the vessel is latitude  $60^{\circ} 00' N$ , Longitude  $020^{\circ} 00' W$  and her course is  $225^{\circ}$ . Describe the weather forecast for the next few hours. (20 marks)
  
  - b) Calculate the surface wind speed at following positions. (In the Analysis chart Geostrophic Wind Scale – Geostrophic wind speed in knots)
    - i.  $50^{\circ} 00' N, 030^{\circ} 00' W$
    - ii.  $40^{\circ} 00' N, 040^{\circ} 00' W$

(05 marks each)

- 4)
- a) What are the optimum conditions for a Tropical Revolving Storm to form. (15 marks)
  - b) Describe the actions you would take once a TRS is confirmed in the vicinity. (15 marks)
- 5)
- a) Describe Wind drift, Gradient and upwelling currents. (15 marks)
  - b) Mark in the provided map the prominent currents in the Atlantic. (15 marks)
- 6)
- a) Explain the formation of a front. (15 marks)
  - b) Describe the weather associated with warm, cold and occluded fronts. (05 marks each)

