



**DIRECTORATE OF MERCHANT SHIPPING
GOVERNMENT OF SRI LANKA**

CERTIFICATE OF COMPETENCY EXAMINATION

GRADE : OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF
500 GT OR MORE (UNLIMITED)

SUBJECT : OPERATIONAL SAFETY

DATE : 15.08.2023

Time allowed THREE hours

Total marks : 180

Answer all questions

Pass marks : 60%

Formulae and all intermediate steps taken in reaching your answer should be clearly shown. You may draw sketches wherever required.

- 1) Answer the following questions with regard to ship's ballast water operations:
 - a) Explain in detail how you will familiarize yourself with vessels ballasting and de-ballasting system including important areas you should draw your attention in order to perform safe ballast operation during your watch.

(20 marks)
 - b) List what records that you will maintain in relation to ballast operations carried out at ports or at sea during your watch.

(10 marks)

- 2) Write short notes on following:
 - a) STCW 1978 as amended
 - b) Classification societies
 - c) Marine Insurance
 - d) Charter parties
 - e) Maritime Labor Convention

(06 marks each)

- 3)
 - a) A General cargo vessel is loading a cylindrical tank containing oil of RD 0.86 and to store on tank top of hold no:3. Cargo tank dimensions are diameter 4m and height is 6m and 4% of tank volume is allowed for expansion. Find the minimum area required to lay the dunnage over tank top to spread the load without overstressing the tank top. Load density of the tank top is 25Mt/m² and weight of the cylindrical cargo tank is 5Mt.

(20 marks)

- b) Before cargo operation it is customary requirement to check all cargo gear prior handing over cargo gear to stevedores. Briefly describe pre-operation checks to be carried out for lifting gear as a duty officer on a general cargo ship.

(10 marks)

4)

- a) With reference to the IMDG code, describe the precautions that you should take as an OOW before loading any DG packages on board your vessel.

(10 marks)

- b) With reference to Solid bulk cargo handling, describe the information that the Master and /Shipper or Terminal should exchange as per the BLU code.

(10 marks)

- c) With reference to carriage of Solid bulk cargo, describe the precautions that you should take while loading/carrying Group A, B and C cargo in bulk.

(10 marks)

5) Vessel shall be dry docked as per SOLAS requirements and class requirements.

- a) Describe in detail dry docking requirement.

(10 marks)

- b) Describe fully with suitable sketches Critical period and critical instant during dry docking.

(10 marks)

- c) If you were assigned to carry out inspections of fore peak and after peak tanks while in the dry dock, describe how you carry out the assignment.

(10 marks)

6) Answer the following questions with regards to ship's corrosion;

- a) During the ship building process various metals and materials being used to construct a ship. And different corrosion control measures are being adapted to control the corrosion in different areas of the vessel. Explain in detail bimetallic corrosion and areas liable to bimetallic corrosion.

(10 marks)

- b) Explain how it is minimized corrosion in underwater areas of a vessel and explain in detail with a suitable sketch "Impressed current system" used for corrosion control in under water areas.

(20 marks)