

***Candidate's Name:***

***Ports and Shipping Organization  
Seafarers Examination and Certification Directorate***

**Exam Cycle:**

**Subject: Ship's Construction  
Rank: Chief Mate (GT≥3000)**

**Date:  
Time allowed: 2.5 Hrs**

**Q No.1**

With reference to ship building materials describe the following type of steel and explain how and where they are employed in ship construction.

- a) Mild steel (10 M)
- b) High tensile steel (10 M)

**Q No.2**

Define following:

- a) Erosion of metal
- b) Corrosion of metal
- c) Lack of penetration in weld
- d) Tack welding (each 5 M)

**Q No.3**

with the help of sketch /es, draw the construction of hinged weather tight doors& name the different parts (20M)

**Q No.4**

- a) Write a short note regarding how mill scale creates (6M)
- b) Explain the most common methods employed to prepare steel surfaces for painting (14M)

**Q No.5**

With reference to periodical surveys & inspections

- a) State the number of surveys which normally carry out on board of commercial vessels (4M)
- b) Explain the major hull items to be inspected during periodical load line surveys (16M)

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**Q.No: 1**

With reference to ship building

- a) Briefly explain why the materials are tested before being used in ship building. (5 M)
- b) Differentiate between the stress & strain (5 M)
- c) Draw the curve of stress & strain & show the yield point & ultimate tensile stress. (10 M)

**Q.No: 2**

- a) State with aid of sketch/es various faults which may be observed in butt & fillet welds. (13 M)
- b) Name the various available non destructive testing methods. (7 M)

**Q.No: 3**

- a) With help of sketch/es describe a power operated sliding water tight door. (15 M)
- b) State why sliding water tight doors are used on board. (5 M)

**Q.No: 4**

Explain how the steel surface is prepared prior applying modern paints. (20 M)

**Q.No: 5**

Define the following:

- a. Collision bulk head (7 M)
- b. Water tight floors (6 M)
- c. Erosion (7 M)

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- Q.No: 1** a)- Describe with aid of sketch; the importance, location, type, and construction of collision bulkheads. (15 M)  
b)-. How the water tightness of collision bulkhead is tested. (5 M)

- Q.No: 2**  
c) State with aid of sketch/es various faults which may be observed in welding. (14 M)  
d) Name the various available non destructive testing methods in ship plating. (6 M)

**Q.No:3** With regard to load line rules outline the “conditions of assignment. (20 M)

**Q.No: 4** Explain various methods of cathodic protections. (20 M)

**Q.No: 5**  
Define the followings:

- d. Casting and forging (8 M)  
e. Mild steel (6 M)  
f. Elasticity (6 M)

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Cycle :

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**Q1) a-** Describe with the aid of sketches; the importance, location, type, and construction of collision bulkheads.

**(10 marks)**

**b-** Describe with aid of sketch; how the water tightness is maintained where piping in cargo ships penetrate into collision bulkhead.

**(7marks)**

**c-** How the collision bulkhead is tested.

**(3 marks)**

**Q2) a-** Differentiate between destructive and non-destructive tests carried out on welds.

**(5marks)**

**b-** Explain types of non-destructive tests commonly used to prove the quality of a weld.

**(15 marks)**

**Q3) a-** With the aid of a simple sketch describe the structural arrangements of a watertight door fitted below water line.

**(12marks)**

**b-** Elaborate on inspection and maintenance required for watertight door.

**(8marks)**

**Q4)** Describe the following properties of steel:

a -Tensile strength.

b - Ductility.

c - Hardness.

d - Toughness

**(5 marks each)**

**Q5)** What is meant by condition of assignment under load line regulations, and enumerate the requirement for assigning the freeboard

**(20 marks)**