

Candidate's Name:

***Ports and Maritime Organization  
Seafarer's Examination and Certification Directorate***

**Exams Code: mss**

**Subject : Ship Stability & Construction**

**Date:**

**Rank : Master GT<3000- NCV**

**Time allowed: 2.5 Hrs**

**Pass mark: 55**

**1-** A vessel is initially displacing 6650 t. KG 8.40 m, KM 8.90 m, (constant) a 38 t weight is to be discharged from a position on the center line kg 5.2 m, using the vessel's own derrick when the derrick head is 32 m above the keel, calculate the V/L's GM value.

a) The weight is lifted just clear of the initial stowage position.

**(15 Mark)**

b) The weight is finally discharged ashore.

**(10 Mark)**

**2-** With the aid of suitable sketch show the effect of free surface effect of liquids (FSE).

**(20Mark)**

**3-** Explain why the TPC for a given draft will vary with the density of the water in which the ship floats.

**(15 Mark)**

**4-** Explain following welding Faults.

a) Lack of fusion

b) Slag inclusion

c) Porosity

d) Over lap

**(5 marks each)**

**5-** a) How long is the interval between two dry dockings,

**(5Mark)**

b) What precautions to be considered.

**(15Mark)**

i) Before dry docking

ii) After completion of dry docking & re-floating the vessel.

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**1- A ship arrives in port with displacement 6000 tonnes and  $KG=6m$ . She then discharges and loads the following quantities.**

<b>Discharge:</b>	<b>1250</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 4.5 meters.</b>
	<b>675</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 2.5 meters</b>
	<b>420</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 9.0 meters</b>
	<b>980</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 4.25 meters</b>
	<b>550</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 6.0 meters</b>
	<b>700</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 1.0 meters</b>
	<b>70</b>	<b>tonnes of cargo</b>	<b><math>KG</math> 12.0 meters</b>

**During the stay in port 30 tonnes of oil ( $KG=1m$ ) are consumed. If the final  $KM$  is 6.8 m, find the  $GM$  on departure. (25 marks)**

**2- A Ship of 2100 tonnes displacement has  $KM= 5.6$  m and  $KG= 5.0$  m and is floating upright. A weight of 30 tones already on board on the port side is shifted 7 m transversely to starboard side. Find resultant list. (20 marks)**

**3- Define the followings terms:**

**(5 mark each)**

- a) Stowage factor**
- b) Gross tonnage**
- c) Dead weight**

**4- With the help of sketch, explain an accommodation water tight door. (20 marks)**

**5- Explain Electro – chemical nature of corrosion and how can be avoided. (20 marks)**