



# **FIRST MATE (FG) PHASE-I WRITTEN: CARGO (FG)**

**FOR INDIAN COMPETENCY EXAM**



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## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

Paper -1

Date: 16th Jan-2024

#### Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

#### PART A

Q.1 M.V. Hindship arrived Aden (RD 1.027) in partly loaded condition with the following drafts: For'd 7.25m, Aft: 7.95m and Mid-ship: 7.55m. What maximum cargo quantity will you order to load if she has to sail on even keel in SW (Tropical Zone) with a hog of 4 cms? Also find the drafts in SW. Estimated port consumption of DO and FW at Aden is 84 mt. Also 100 mt each of DO and FW are to be received prior to sailing.

[Click Here to See the Answer](#)

Q.2 A boxed shaped tank (27m x 14m x 11m) was loaded at 400C to 96% of its capacity with fuel oil (Density at 150C in vaccum = 0.8825 t/m3). If this fuel oil is heated to 500C and 20% of the volume at 500C is consumed, calculate the ullage shown by the tank above the deck, trim 2.4m by stern, list 20 to Starboard and LBP of ship 200m.

[Click Here to See the Answer](#)

Q.3 Briefly explain the following: -

- a) Periodic testing of lifting appliances and loose gears.
- b) Inspection of vulnerable areas in the dry cargo holds for damages.

[Click Here to See the Answer](#)

#### PART B

Q.4 a) What is a Pressure Vacuum (PV) breaker? Inspection to be carried out to ensure effective functioning of PV breaker.  
b) As a Chief Officer of a Crude oil Tanker, explain the procedures to be followed for unloading of cargo.

[Click Here to See the Answer](#)

Q.5 a) What is a "Certificate of fitness" of a Gas / Chemical Tanker? (5 marks)  
b) Explain the use of P & A Manual on a Chemical Tanker? (5 marks)



c) Explain the procedures for loading cargo onboard LNG ship. (15 marks)

[\*\*Click Here to See the Answer\*\*](#)

Q.6 Explain the duties of carrier & documents required for carriage of IMDG cargo?

[\*\*Click Here to See the Answer\*\*](#)

Q.7 a. List the precautions as per the IMSBC Code pertaining to shifting of bulk cargoes.

b. Explain the hazards associated with carriage of Iron Ore Fines?

[\*\*Click Here to See the Answer\*\*](#)

Q.8 Describe the stability criteria for a ship carrying grain in bulk for ships with and without a Document of Authorization.

[\*\*Click Here to See the Answer\*\*](#)

Q.9 a) Describe the procedures for loading and carriage of refrigerated containers.

b) Explain the need to monitor atmosphere in Ro-Ro spaces.

[\*\*Click Here to See the Answer\*\*](#)

Q.10 a) Explain the stowage and securing of Timber deck cargo on a timber carrier.

b) Describe with sketch the securing arrangements of heavy lift project cargo of boiler weighing 300 tons on deck.

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

Paper-2

Date: - 16th Jan-2024

#### Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

#### **PART - A**

Q.1 M.V. 'Hindship' arrived port for part discharge with the following drafts F 8.98m, A 9.12m, Mid 9.08m. Density of dock water 1.014. After discharging she sailed drawing 6.7m on even keel with 8 cms hog. Calculate how much cargo she discharged if she replenished in the port D.O. 118t, FW 215t and consumed 7t of DO and 50t of FW during port stay. Calculate the quantity of cargo discharged.

[Click Here to See the Answer](#)

Q.2 A box shaped tank on board a ship of length 30m, breadth 18m and depth 20m containing crude oil of density at 150C =  $0.8275 \text{ t/m}^3$  had an ullage of 1.68m as measured by an UTI tape. The ullage port was located 3m forward of the aft bulkhead, 1m above the tank top and 2m to port of the centerline of the tank. Vessel's trim was 2.5m by stern and was listed to 10 to starboard and observed temperature of cargo to be 320C. Calculate the quantity of oil in the tank if LBP of the ship was 215 mtr.

[Click Here to See the Answer](#)

Q.3 Describe how you will secure hatch covers and explain various you will use for testing the weather tightness of hatch covers.

[Click Here to See the Answer](#)

#### **PART - B**

Q.4 a) Sketch a block diagram of IGS of an oil tanker and describe the function of its various components.

b) Differentiate between PV breaker and PV valve.

[Click Here to See the Answer](#)

Q.5 Describe briefly all the chapters of IMDG Code and their applicability to Shipboard personnel. Dock personnel, Shipper and Manufacturer of packages.

[Click Here to See the Answer](#)

Q.6 a) State the contents of Procedure and Arrangement Manual are required under regulations 14 of MARPOL Annex II.



b) Explain the operation of the Cascade type Reliquefaction plant in a gas carrier.

[\*\*Click Here to See the Answer\*\*](#)

Q.7 Enumerate the main hazard associated with carrying iron fines cargo in bulk.

Explain the precautions to be taken as per IMSBC.

[\*\*Click Here to See the Answer\*\*](#)

Q.8 a) With the help of statical stability curve, describe the stability criteria for a ship carrying grain in bulk.

b) What are the conditions for loading grain without Document of Authentication?

[\*\*Click Here to See the Answer\*\*](#)

Q.9 a) Explain with the help of a diagram securing arrangements of steel coils.

b) Explain with the help of a diagram the refrigeration system on reefer ship.

[\*\*Click Here to See the Answer\*\*](#)

Q.10 With reference to “Code of Safe Practices for cargo stowage and securing” sketch and describe the method used for lashing and securing heavy cargoes.

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

Paper-1

Date: - 8th April-2024

Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

#### **PART A**

Q.1 Drafts of M.V. Hindship on arrival in S.W. were observed as follows:

	Port	Starboard	
Forward	7.96 m	8.00 m	draft mark located 2.10 m aft of FP
Mid-ship	8.26 m	8.40 m	draft mark located 2m as of mid-length
Aft	8.58 m	8.64 m	draft mark located 1.06 m forward of AP

On arrival weights on board were as:

F.O. 460 T, D.O. 130 T, F.W. 80 T, Ballast 430 T.

- a) Determine the quantity of cargo on board.
- b) Determine maximum quantity of cargo to load if in final condition the ship is expected to be on even keel, loaded to her summer draft with a sag of 14cm.

In port she is to receive 120 T of F.W., 100 T of D.O., consume 40T of fuel and F.W. and pump out 280 T of ballast.

[\*\*Click Here to See the Answer\*\*](#)

Q.2 A boxed shaped tank of dimensions 35 x 15 x 10m had an ullage of 5.7m at 27OC after completion of loading. Location of ullage port is 1 m above the deck, 2m port of centre line and 4 m from aft bulkhead. LBP of the vessel is 120 m. Vessel was listed 20 to port and trimmed 2.5 m by stern at the time of taking the ullage. Density of oil is 0.8150 t/m<sup>3</sup> at 15OC.

Find the following:

- a) Weight of oil in vacuum
- b) Volume of oil in the tank if temperature increases to 36OC during the voyage.

[\*\*Click Here to See the Answer\*\*](#)

Q.3 a) Describe the procedure to check the weather tightness of hatch covers. What is the action to be taken in case of noticing a deformity in the hatch covers. (15 Marks)  
b) Describe contents of the register for ships lifting appliances 1990. (10 Marks)

[\*\*Click Here to See the Answer\*\*](#)



## PART B

Q.4 a) Explain MARPOL minimum criteria w.r.t. to the number of tanks to be crude oil washed during unloading operations.

b) Explain in brief the content of COW checklist.

[\*\*Click Here to See the Answer\*\*](#)

Q.5 a) What are various types of Gas carriers defined in IGC code. (10 Marks)

b) Write notes on following w.r.t. to Chemical tankers: (15 Marks)

i) Types of Chemical tankers

ii) Procedure & arrangements manual (P & A)

[\*\*Click Here to See the Answer\*\*](#)

Q.6 a) State the purpose of shipper's declaration and Dangerous good manifest and the contents therein w.r.t. IMDG code? (15 Marks)

b) Briefly explain the Document of compliance w.r.t. IMDG code. (10 Marks)

[\*\*Click Here to See the Answer\*\*](#)

Q.7 a) State the stability criteria to be complied with as per the Grain code. (10 Marks)

b) With suitable sketches explain securing (with wire mesh) of Partly filled bulk grain cargo compartment. (15 Marks)

[\*\*Click Here to See the Answer\*\*](#)

Q.8 With neat sketches, explain loading and securing of a diesel generator set weighing 80 Ton tank top of a general cargo ship.

[\*\*Click Here to See the Answer\*\*](#)

Q.9 A container loaded on deck containing IMDG code was found to be leaking some of its cargo. A deck hand who went to clean the same inhaled the toxic fumes and collapsed. What actions are required to be taken on board with respect to safety, health and reporting as per IMDG Code considering some cargo was washed overboard. As a Chief Officer how would you have prevented this accident.

[\*\*Click Here to See the Answer\*\*](#)

Q.10 Enumerate the precautions before loading, during voyage and on delivery of reefer cargoes loaded in Reefer hold.

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

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Paper-2

Date: - 8th April-2024

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Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

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### PART - A

Q.1 M.V. 'Hindship' has loaded grain, stowage factor 1.81 m<sup>3</sup>/tonne to a displacement of 17,500 tonne. In the loaded condition the effective KG is 7.827 m, FSM = 2625 Tm. All grain spaces are full, except No. 2 tween deck and No. 5 lower tween deck, which are partially full. The tabulated transverse volumetric heeling moments are as follows:

No. 1 hold 372 m <sup>4</sup>	No.1 TDK 282 m <sup>4</sup>
No. 2 hold 702 m <sup>4</sup>	No.2 TDK 301 m <sup>4</sup>
No. 3 hold 580 m <sup>4</sup>	No.3 TDK 280 m <sup>4</sup>
No. 4 hold 472 m <sup>4</sup>	No.4 TDK 242 m <sup>4</sup>
No. 5 hold 160 m <sup>4</sup>	No.5 TDK 370 m <sup>4</sup>

The value of the Kg used as the calculation of the vessel's effective KG were as follows: For lower holds, the centroid of the space for tween decks centroid of space except No. 2 and No. 5 tween deck where Kg of cargo was used. Draw the GZ curve up to 40° angle and from the curve determine the angle of heel due shift of cargo if KN value at 120° angle is known to be 1.799 and show if ship complies with grain stability regulation, if angle of flooding is 43°

[Click Here to See the Answer](#)



Q.2 An oil tanker of LBP 200 m has a box shaped tank of dimensions L 40 m x B 20 m x D 20 m and is loaded with oil. On completion, the ullage as measured from a sonic tape was observed to be 1.24 m and temperature was 37OC. A water dip ullage of 20.94 m was also found. The ullage port was located 1.1 m above the tank top and 1.6 m forward of Aft bulkhead. The vessel was trimmed 3 m by stern. Terminal gave the density of oil @ 15OC as 0.8145 t/m3. Determine the quantity of oil in the tank.

[\*\*Click Here to See the Answer\*\*](#)

Q.3 Sketch & label the ramp on stern door of a RO-RO vessel & describe briefly maintenance required to be carried out.

[\*\*Click Here to See the Answer\*\*](#)

#### **PART - B**

Q.4 a) What information should be provided by Shipper when loading packaged dangerous cargo as per IMDG Code? (10 marks)  
b) What measures will you take to ensure safe stowage and carriage of explosives as per IMDG Code? (15 marks)

[\*\*Click Here to See the Answer\*\*](#)

Q.5 a) With the help of a sketch show location of following containers in bay plan of a container ship, 100084 & 090806. Show one bay forward & one bay aft of these bays.  
b) With proper sketches explain how will you carry out lashings of a 40ft Trailor on a flat rack container.

[\*\*Click Here to See the Answer\*\*](#)

Q.6 a) The last cargo carried on a reefer cargo hold was freshly harvested seeds in gunny bags, next cargo to load is shrimps. How will you get your hold ready to load this cargo?  
b) Your vessel has discharged Category X cargo from 3P & 3S Tanks in Sudan (Red Sea). What are the processes involved to load category X cargo in these tanks in Russia (Black Sea port).

[\*\*Click Here to See the Answer\*\*](#)

Q.7 a) What are Torsional Stress and how are they effectively controlled on a container vessel. (10 marks)  
b) Define as per Dock Labour Board Regulations. (15 marks)  
i) Competent authority ii) Competent Person iii) Responsible Person

[\*\*Click Here to See the Answer\*\*](#)



Q.8 a) As per IMO MSC Circular, state what are the conditions under which holds of ship will be fumigated and state the precautions for in transit fumigation. (10 marks)  
b) Enumerate the hazards associated with Direct Reduced Iron and precautions to be taken during loading. (15 marks)

[\*\*Click Here to See the Answer\*\*](#)

Q.9 Briefly describe about liquefied Gas Carriers and the precautions required during loading, carriage and discharge of liquefied gases.

[\*\*Click Here to See the Answer\*\*](#)

Q.10 On a crude oil tanker an oil tank is required to be cleaned, gas freed for survey purposes during 6 days ballast passage. Describe how you will plan and execute the operations.

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

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AM Paper

Date: - 15th July-2024

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Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

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### PART A

Q.1 M.V. Hindship arrived at a load port in tropical zone with 480T of bunkers, 290T of FW, 80T of stores and a constant of 110T. She is to sail with maximum cargo after 5 days of port stay. She will enter summer zone 3.5 days after departure and after a further 5.5 days she will re-enter tropical zone. Two days thereafter she is to call at a port for 12 Hrs to receive 120T of FW and the maximum quantity of bunkers. 5 days after departure from the bunkering port, she will re-enter summer zone. Calculate the maximum quantity of cargo she can load at the load port and thereafter the maximum quantity of bunkers she can receive at the bunkering port. Fuel and FW consumption are 35t and 16t respectively at sea and 5t and 16t respectively in port.

[\*\*Click Here to See the Answer\*\*](#)

Q.2 A box-shaped tank of a vessel had 3000 mt of cargo on arrival. To this, 2000m<sup>3</sup> of the same cargo of density 0.850 was added at temperature 30OC. Find the final observed ullage using a uti tape from a point 4.0m forward of the aft bulkhead, 1.0m above the deck and 4.0m to the port of the centerline of the tank when the trim was 2.0m by stern and list nil. The tank dimensions L=22m, B=20m, H=15m and LBP of the vessel 220m. Final temperature 30OC. Also, find the total quantity of cargo. All weights in air.

[\*\*Click Here to See the Answer\*\*](#)

Q.3 Outline and describe common damages and defects that may occur on water tight transverse bulkheads, situated at end of cargo holds in bulk carrier.

[\*\*Click Here to See the Answer\*\*](#)

### PART B

Q.4 Make a neat sketch of the inert gas system onboard an oil tanker of 49,900 T dwt and mark the components. Also, write the regulatory requirement of the inert gas system fitting with regards to the oil tanker size and the inert gas system capabilities.



[\*\*Click Here to See the Answer\*\*](#)

Q.5 Define Grain cargoes, and explain on the provisions as laid down in SOLAS chapter VI with reference to IMO grain code.

[\*\*Click Here to See the Answer\*\*](#)

Q.6 With reference to IGC code, explain:

- i) Boiling point
- ii) Cargo containment system hold space
- iii) Inter- barrier space
- iv) MARVS.

[\*\*Click Here to See the Answer\*\*](#)

Q.7 What are the contents of shipper's declaration of dangerous goods and explosives which may be carried on passenger ships?

[\*\*Click Here to See the Answer\*\*](#)

Q.8 Explain on the precautions and procedure to be followed in regard to transportation of Refrigerated Cargoes on a Reefer Vessel.

[\*\*Click Here to See the Answer\*\*](#)

Q.9 Explain the safe procedure, precautions & maintenance involved in the following aspects of a Pure Car Carrier (PCC) operation:

- a) Shore Ramp operation
- b) Ventilation system for Cargo Holds
- c) Fire Extinguishing systems of Cargo Holds
- d) Crew safety during Cargo operation.

[\*\*Click Here to See the Answer\*\*](#)

Q.10 Detail hazards and precautions while loading heavy lifts.

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

PM Paper

Date: - 15th July-2024

Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

#### **PART - A**

Q.1 M.V. 'Hindship' is arrived port with the following drafts F 8.73m, A 8.95m, Mid 8.91m. Density of Dock water 1.016, weights on board H.O. 248T, D.O. 88T, FW 115T, L.O. 20T and unpumpable ballast 48T. The constant and stores as determined on completion of discharge was 145T. Calculate the quantity of cargo discharged. Draft marks are located 3m aft of FP, 5m and 1m ford of midship.

[Click Here to See the Answer](#)

Q.2 A box shaped tank L 28m, B 20m, D 18m, of an oil tanker containing crude oil of density at 15OC = 0.8350 t/m<sup>3</sup> had an ullage of 1.40m as measured by UTI detector after loading and observed temperature was 32OC. A water dip 12 cms was found. The ullage port was located 1.2 m above the tank top and 2.0 m forward of aft bulkhead. Vessel was trimmed 2m by stern. Determine the quantity of oil in the tank. LBP of the tanker was 220m.

[Click Here to See the Answer](#)

Q.3 a) Describe the common damage / defects that may occur on watertight transverse bulkhead situated at the ends of cargo holds of bulk carrier and the measures to be taken to minimize such damages.

b) Explain the actions to be taken and requirements for periodic through examination and inspection of cargo handling gears.

[Click Here to See the Answer](#)

#### **PART - B**

Q.4 a) Define the following:

- i) Sour Crude ii) Spiked Crude iii) Pour point
- iv) Auto Ignition temperature v) Clean ballast

b) Explain with a sketch the flammability diagram and its importance in safe gas freeing.

[Click Here to See the Answer](#)



Q.5 a) Describe briefly the preparations required before loading Liquefied Gas cargo after it comes out of drydock and proceeds for loading port.

b) Describe the CDP of cargo tanks as per MARPOL Annex II.

[\*\*Click Here to See the Answer\*\*](#)

Q.6 With reference to IMDG Code, describe the following:

- a) Stowage category
- b) Segregation table
- c) Compatibility
- d) Subsidiary risk
- e) Labels and placards

[\*\*Click Here to See the Answer\*\*](#)

Q.7 Discuss the various hazards of DRI? What care shall be taken during transit?

[\*\*Click Here to See the Answer\*\*](#)

Q.8 Describe the lashing material specifications and methods available for securing grain cargo in filled/ partly filled compartments as per grain code.

[\*\*Click Here to See the Answer\*\*](#)

Q.9 Describe the planning and precautions to be taken before loading and unloading of containers in a cellular container ship?

[\*\*Click Here to See the Answer\*\*](#)

Q.10 a) What precautions to be taken for loading Heavy lift on deck?

b) What lashing arrangements are required for the Heavy lift on deck, as per Cargo Securing Manual?

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

AM Paper

Date: - 7th Oct-2024

Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

#### PART A

Q.1 M.V. "Hindship" arrived port with following drafts F(P) 8.60 M, F(S) 8.70m, A(P) 8.85 m, A (S) 8.93m, Mid (P) 8.75m and Mid (S) 8.87m in dock water RD 1.018. After discharging part cargo, she has to shift to another berth with a hog of 5cm, where maximum draft allowed is 5.90m. Calculate the minimum quantity of cargo to discharge. During the stay at first berth she consumed 10 t of DO and 14 t of fresh water. Draft marks are located 2m aft of FP 4m forward of AP and 1m forward of midship.

[\*\*Click Here to See the Answer\*\*](#)

Q.2 On an oil tanker, a box shaped cargo oil tank measuring 26 x 15 x 17m (L x B x H) is loaded with Diesel Oil whose density at 15OC is 0.8424 g/cc. The final ullage by UTI tape is observed to be 1.86m and temperature of cargo is 34.70C. Find the quantity of cargo loaded if ullage port is 80cm above the top of tanks, 5m forward of aft bulkhead of tank and 4m starboard of tank centerline. LBP 225m, trim 5m by stern and 2.50 Stbd list.

[\*\*Click Here to See the Answer\*\*](#)

Q.3 a) Write short notes: i) Mates receipts ii) Note of protest iii) Bill of lading.  
b) Inspection of critical spaces of cargo hold after discharging of high-density cargo.

[\*\*Click Here to See the Answer\*\*](#)

#### PART B

Q.4 a) Explain the function and maintenance of:

- i) Pressure Vacuum (PV) Valve. ii) Crude Oil Washing (COW) machine (fixed type)
- b) Describe the procedure for crude oil washing of tanks on tanker during discharging operations.

[\*\*Click Here to See the Answer\*\*](#)



Q.5 Describe the tank cleaning operations on a chemical tanker after discharge of cargo.

[\*\*Click Here to See the Answer\*\*](#)

Q.6 Write short notes on the following wrt IMDG Code:

- i) Medical First Aid Gude (MFAG) ii) Subsidiary Risk Label
- iii) Packaging group iv) Segregation v) UN number

[\*\*Click Here to See the Answer\*\*](#)

Q.7 Describe various precautions you will take as Chief Officer for loading for a heavy lift cargo. Draw a neat sketch showing securing arrangement of this cargo.

[\*\*Click Here to See the Answer\*\*](#)

Q.8 Explain:

- i) Torsional Stress ii) Stack height iii) Twist Locks
- iv) Transverse Lashing tube v) Anti-heeling tanks

[\*\*Click Here to See the Answer\*\*](#)

Q.9 Explain the hazards associated with Direct Reduced Iron? What are the precautions to be taken prior loading, during loading and during the sea passage?

[\*\*Click Here to See the Answer\*\*](#)

Q.10 Describe the securing methods available for securing grain surfaces in filled / partly filled compartments as per Grain Code. Support your statements with proper sketches.

[\*\*Click Here to See the Answer\*\*](#)



## FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)

### FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

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PM Paper

Date: - 7th Oct-2024

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Notes:

1. Questions 1, 2 and 3 in part A are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks i.e. 25 Marks each.

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#### **PART - A**

Q.1 M.V. 'Hindship' arrived port in a located condition with drafts F 9.20 am, A 9.30 m, Midship 9.30 m, in water density 1.005 t/m3. Calculate quantity of cargo discharged if the ship is to sail out with draft of 6.50 m, with an expected hog of 12 cm. The draft marks are 3m aft of forward perpendicular, 1.5 m abaft midships & 5m aft of after perpendicular.

[\*\*Click Here to See the Answer\*\*](#)

Q.2 A box shaped cargo oil tank of dimensions 30m x 20m x 18m is to be loaded with crude oil at a temperature of 25°C. Density of oil at 15°C in vacuum is 0.8240. If 2% of the volume of the tank is to be left for expansion, calculate: a) The final observed ullage by the measuring tape at the ullage port located 3m forward of aft bulkhead. 1m above the tank and 2m port of centreline. b) Quantity of oil loaded on board (LBP = 220m, Trim 3m by stern and list 10 to star board).

[\*\*Click Here to See the Answer\*\*](#)

Q.3 a) With reference to Dock Workers (Safety, Health and Welfare) Act 1990 define "authorized person" and "competent person".

b) Describe the factors to be taken in to account during cargo planning stage in order to minimize the damage to watertight transverse bulkheads and tank tops in bulk carriers having combination cargo / ballast holds.

[\*\*Click Here to See the Answer\*\*](#)

#### **PART - B**

Q.4 Describe the precautions for COW and the checklist to be followed.

[\*\*Click Here to See the Answer\*\*](#)

Q.5 What are the various types of Liquefied Gas Carriers considering survival capacity as per IGC code?

[\*\*Click Here to See the Answer\*\*](#)



Q.6 Write a short note on the purposes of the IMDG code and list out its content. Explain the procedure to obtain the correct EmS and MFAG table for a given dangerous cargo.

[\*\*Click Here to See the Answer\*\*](#)

Q.7 With reference to IMSBC Code, describe the detailed procedure for sampling of Iron ore fines. Explain elaborately the process of liquefaction of iron ores fines.

[\*\*Click Here to See the Answer\*\*](#)

Q.8 With reference to the Code of safe practices for carriage of grain:

- a) Define: i) Angle of flooding ii) Specially suitable compartment
- b) Demonstrate how to use the permissible heeling moment of grain in the grain loading booklet.

[\*\*Click Here to See the Answer\*\*](#)

Q.9 a) Discuss the planning and preparations required before loading and unloading of vehicles on a car carrier.

b) Describe the procedure for opening, closing and securing of hull opening on Ro-Ro ship.

[\*\*Click Here to See the Answer\*\*](#)

Q.10 a) Define:

- i) Competent person
- ii) Authorized person
- iii) Lifting appliances
- iv) Loose gear

b) Describe care and maintenance of a crane wire.

[\*\*Click Here to See the Answer\*\*](#)