(Paper Format)

FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. Question 1, 2 and 3 are compulsory. Attempt any five questions of the remaining seven questions.
2. All questions carry equal marks.

Q.1. Cargo Calculations- Draft Survey/ Making Cargo Plan given hatch dimensions, stowage factor, load density, broken stowage (maximum 4 cargoes)

Q.2. Cargo Calculations- Oil Cargo calculations (including wedge)

Q.3. Damage to cargo spaces, ballast tanks and hatch covers- Inspection and Reporting/ Inspection of Cargo gear/ Cargo documents/ Deck Watch

Q.4. Crude/ Petroleum product

Q.5. Liquid chemicals cargo, Liquefied Gas Cargoes

Q.6 IMDG Cargoes

Q.7 Bulk Cargoes (Ores, Concentrates, Sulphur, Coal, HBI/DRI) including IMSBC Code

Q.8 Grain Regulations/ Calculations on Grain Stability Compliance

Q.9. Containers, Car Carrier, Ro-Ro

Q.10 General Cargo/ Heavy Lift Cargo/ Refrigerated Cargo

Please note that the above format is only an indicative of the examination paper. The candidates are advised to refer to detailed teaching syllabus and the course outline.

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GOVERNMENT OF INDIA

Date: - 13th Jan-2025 **PM Paper**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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 at a draft of F 9.20 m, A 9.30 m, mid 9.30 m, in water of RD 1.005. The draft marks are 2 m aft of FP, 1.5 m aft of midships and 3 m for'd of AP. She is to shift to a berth where a depth of water is 6.5 m. Vessel is required to have 0.5 m of under keel clearance.
Calculate: the minimum quantity of cargo to discharge if after discharging that cargo she is expected to sag by 10 cms.

Q.2 Find the final ullage using a UTI gauge, when 3,200 mt of Gas oil (density 0.8860 t/m³ in vacuum) is blended with 2,300 cubic metres of Diesel oil at 43°C (density 0.8693 t/m³ in vacuum) in a box shaped tank 28.5m × 18m × 15m (L × B × D) on board a ship of LBP 196.4 m, trimmed 1.2 m by head and listed 3° to port. Ullage point for this tank is located 5.8 m forward of the after bulkhead, 4.7 m to stbd of the centreline and 112 cms above the top of the tank. Final temperature on completion of blending was found to be 20°C.

Q.3 What are the procedures for testing derricks and cranes? Describe with an example?

PART – B

Q.4 Explain with neat sketch working principle of any type of oxygen analyser & explosimeter.

Q.5 (a) Explain briefly any five hazards of chemical cargoes & what control measures are taken on chemical tanker to reduce risks from these hazards.
(b) Describe with a diagram about a LNG ship's membrane tank structure.

Q.6 As per IMDG Code, describe following:
(i) EMS (ii) MFAG (iii) Segregation of dangerous goods
(iv) Dangerous goods Manifest (v) Various types of magazines for carriage of explosives.

Q.7 List out the hazards and procedures for loading concentrates.

Q.8 As per IMO Grain code describe briefly with sketches various methods of lashing & securing grain in partially filled & fully filled compartments.

Q.9 (a) Write notes on Bay plans for containers.
(b) Explain torsional stresses and how will you rectify it?

Q.10 (a) What are brine solutions? List out the advantages of a brine trap.
(b) What preparations / precautions you will take during voyage in order to protect cargoes which are liable to freeze?

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GOVERNMENT OF INDIA

Date: - 13th Jan-2025 **AM Paper**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.**
2. Answer any five out of remaining questions from Part B.
3. All questions carry equal marks i.e. 25 Marks each.

PART A

Q.1 M.V. Hindship arrived port with drafts F: 5.80m, Mid: 6.38m & A: 6.80m. in RD of 1.025. After loading 1250mt of cargo she sailed on an even keel draft but with 5cms of hog in seawater of RD 1.025. Calculate her departure drafts F, A, & Midships if she sailed in an upright condition after consumption of 9.25 mt/DO, 43 mt/FW in port & also replenished 200 mt/FW & 333 mt/HFO during her stay in this port.

Q.2 A box-shaped cargo tank 40m × 22m × 18m was observed to have a sounding of 15cm by sounding rod. Ullage reference point was located at the tank top, 3 m forward of aft bulkhead. Vessel was trimmed 1m by stern and LBP of vessel was 255 m. Upon completion of loading in the tank, vessel was even keel and ullage of tank by sonic gauge was 1.10 m. Calculate the Quantity of oil loaded in the tank, if the observed temperature was 30°C and API gravity was 30.5 in both cases.

Q.3 (a) Explain the procedure for maintenance of hatch covers.
(b) Describe the methods used for testing the weather tightness of hatch covers.

PART B

Q.4 (a) What is PV breaker? How will you ensure that it is protecting the cargo tanks effectively?
(b) You are the C/off of Crude oil tanker. Explain in proper sequence the procedures to be followed for unloading of cargo and COW in an oil tanker.

Q.5 (a) What are the features of "certificate of fitness" on a Gas/chemical carrier? What is the use of P & A Manual on a chemical tanker?
(b) Explain in proper sequence the procedures of preparation and then loading operations of full cargo of LNG.

Q.6 What information is required to be provided by shipper when loading packaged dangerous cargoes? What measures will you take to ensure a safe stowage and carriage of explosives?

Q.7 What precautions are recommended when loading concentrates as per IMSBC code.

Q.8 (a) Describe the procedures to check weather tightness of hatch covers with their advantages and disadvantages.
(b) Describe the precautions to be taken if cargo has to be carried under Fumigation.

Q.9 (a) State the lashing requirements for Timber deck cargo as per Code of Safe Practice for Ships Carrying Timber Deck Cargo.
(b) With the help of neat sketch describe general outline of refrigeration system (Brine Cooling) on Reefer ships.

Q.10 (a) Explain the precautions to be taken when handling dangerous cargoes.
(b) Describe the vulnerable areas on ships requiring particular attention against infestation.

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GOVERNMENT OF INDIA

Date: - 7th Oct-2024 **PM Paper**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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 in a located condition with drafts F 9.20 am, A 9.30 m, Midship 9.30 m, in water density 1.005 t/m^3. 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.

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 1^O to star board).

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.

PART – B

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

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

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.

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.

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

a) Define: i) Agle of flooding ii) Specially suitable compartment

b) Demonstrate how to use the permissible heeling moment of grain in the grain loading booklet.

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.

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.

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GOVERNMENT OF INDIA

Date: - 7th Oct-2024 **AM Paper**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.**
2. Answer any five out of remaining questions from Part B.
3. 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.

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 $15^{O}C$ is 0.8424 g/cc. The final ullage by UTI tape is observed to be 1.86m and temperature of cargo is $34.7^{O}C$. 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 2.5^{O} Stbd list.

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.

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.

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

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

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.

Q.8 Explain:

i) Torsional Stress ii) Stack height iii) Twist Locks

iv) Transverse Lashing tube v) Anti-heeling tanks

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?

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.

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GOVERNMENT OF INDIA

Date: - 15th July-2024 **PM Paper**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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.

Q.2 A box shaped tank L 28m, B 20m, D 18m, of an oil tanker containing crude oil of density at $15^{O}C$ = 0.8350 t/m^3 had an ullage of 1.40m as measured by UTI detector after loading and observed temperature was $32^{O}C$. 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.

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.

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.

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.

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

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

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

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

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?

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GOVERNMENT OF INDIA

Date: - 15th July-2024 **AM Paper**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.**
2. Answer any five out of remaining questions from Part B.
3. All questions carry equal marks i.e. 25 Marks each.

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.

Q.2 A box-shaped tank of a vessel had 3000 mt of cargo on arrival. To this, 2000m^3 of the same cargo of density 0.850 was added at temperature 30^{O}C. 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 30^{O}C. Also, find the total quantity of cargo. All weights in air.

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.

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.

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

Q.6 With reference to IGC code, explain:

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

iv) MARVS.

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

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

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.

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

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GOVERNMENT OF INDIA

Date: - 8th April-2024 **Paper 2**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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' has loaded grain, stowage factor 1.81 m^3/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^4	No.1 TDK 282 m^4
No. 2 hold 702 m^4	No.2 TDK 301 m^4
No. 3 hold 580 m^4	No.3 TDK 280 m^4
No. 4 hold 472 m^4	No.4 TDK 242 m^4
No. 5 hold 160 m^4	No.5 TDK 370 m^4

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^O angle and from the curve determine the angle of heel due shift of cargo if KN value at 12^Oangle is known to be 1.799 and show if ship complies with grain stability regulation, if angle of flooding is 43^O.

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 37^OC. 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 @ 15^OC as 0.8145 t/m^3. Determine the quantity of oil in the tank.

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

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)

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.

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).

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

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)

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

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.

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GOVERNMENT OF INDIA

Date: - 8th April-2024 **Paper 1**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.**
2. Answer any five out of remaining questions from Part B.
3. 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 2 m at 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.

Q.2 A boxed shaped tank of dimensions 35 x 15 x 10m had an ullage of 5.7m at $27^{O}C$ 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 2^{O} to port and trimmed 2.5 m by stern at the time of taking the ullage. Density of oil is 0.8150 t/m^3 at $15^{O}C$.
Find the following:

a) Weight of oil in vacuum
b) Volume of oil in the tank if temperature increases to $36^{O}C$ during the voyage.

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)

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.

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)

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)

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)

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

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.

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

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GOVERNMENT OF INDIA

Date: - 16th Jan-2024 **Paper 2**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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.

Q.2 A box shaped tank on board a ship of length 30m, breadth 18m and depth 20m containing crude oil of density at $15^{O}C$ = 0.8275 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 1^{O} to starboard and observed temperature of cargo to be $32^{O}C$. Calculate the quantity of oil in the tank if LBP of the ship was 215 mtr.

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

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.

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

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 Reliquefication plant in a gas carrier.

Q.7 Enumerate the main hazard associated with carrying iron fines cargo in bulk. Explain the precautions to be taken as per IMSBC.

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?

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.

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.

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GOVERNMENT OF INDIA

Date: - 16th Jan-2024 **Paper 1**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.**
2. Answer any five out of remaining questions from Part B.
3. 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.

Q.2 A boxed shaped tank (27m x 14m x 11m) was loaded at 40^{O}C to 96% of its capacity with fuel oil (Density at 15^{O}C in vaccum = 0.8825 t/m^3). If this fuel oil is heated to 50^{O}C and 20% of the volume at 50^{O}C is consumed, calculate the ullage shown by the tank above the deck, trim 2.4m by stern, list 2^{O} to Starboard and LBP of ship 200m.

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.

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.

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)

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

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?

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

Q.9 a) Describe the procedures for loading and carriage of refrigerated containers.
b) Explain the need to monitor atmosphere in Ro-Ro spaces.

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.

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GOVERNMENT OF INDIA

Date: - 6th Oct-2023 **Paper 2**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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 drafts F: 5.80m, Mid: 6.38m & A: 6.80 m, in RD of 1.025. After loading 1250 mt of cargo she sailed on an even keel draft but with 5 cms of hog in seawater of RD 1.025. Calculate her departure drafts F, A & Midships if she sailed in an upright condition after consumption of 9.25 mt/DO. 43mt/FW in port & also replenished 200 mt/FW & 333 mt/HO during her stay at this port.

Q.2 A box shaped tank L 30 m x B 18 m x 20 m containing crude oil of density of $15^{O}C$ – $0.8275 t/m^3$ had an ullage of 1.80 m as measured bv a sonic tape. The ullage port was located at 3 m fwd of the aft bulkhead 1m above the tank top and 2m to port of centreline of tank. Trim observed was 3 m and the vessel listed 1^{O} to starboard. Observed temp $32.5^{O}C$. Calculate the quantity of oil in tank if the LBP of vessel was 215 m.

Q.3 Explain how weather-tightness is maintained in the Hatch covers and precautions will you take for securing the hatch covers before proceeding to sea?

PART – B

Q.4 Write short notes on:

i) Stowage category ii) Compatibility group code

iii) Dangerous cargo Manifest iv) EmS

Q.5 a) Why is the Heel maintained on LPG explain in detail? What are coolants and the use these coolants on LPG? What do you understand by the term hot gassing-up?

b) State the contents of Procedure and Arrangements (P & A) manual as required under Annex II of Marpol 73/78.

Q.6 With reference to IMDG CODE explain segregation criteria for carriage of dangerous goods. Justify your answers with proper sketches.

Q.7 a) Briefly state the classification of solid bulk cargoes as prescribed in the IMSBC code.

b) Enumerate hazards associated with Direct Reduced Iron (DRI) and precaution to be taken while making stowage plan loading on board bulk carrier.

Q.8 With reference to 'Code of Safe Practice for Carriage of Grain'.

a) Define: i) Filled compartment ii) Angle suitable compartment

b) Describe briefly various methods of reducing grain heeling moments on a ship loaded with cargo of grain in bulk.

Q.9 a) Describe the general principles & practices to be followed in the stowage & securing of non-standardized cargoes as given in the code of safe practice for cargo stowage & securing?

b) With sketch of a bay plan on container ships, describe information's reflected in the plan.

c) Briefly state the requirements of construction of standard containers.

Q.10 a) Describe the design, construction & stability requirements of Timber ship.

b) Describe the under deck stowage of logs and its securing arrangements.

c) Significance of voyage planning and ship handling on container ships.

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GOVERNMENT OF INDIA

Date: - 6th Oct-2023 **Paper 1**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.**
2. Answer any five out of remaining questions from Part B.
3. All questions carry equal marks i.e. 25 Marks each.

PART A

Q.1 A vessel has loaded grain, stowage factor 1.60m^3/t to a displacement of 13674 T. In this loaded condition, the fluid GMT is 0.90 m. All grain spaces are full, except No. 2 tween deck, which is partially full. The tabulated transverse volumetric heeling moments are as follows:

No. 1 hold 774m^4	No.1 TD 608m^4
No. 2 hold 929m^4	No.2 TD 601m^4
No. 3 hold 995m^4	No.3 TD 407m^4
No. 4 hold 1022m^4	

The value of the Kg used in the calculation of the vessel's effective KG were as follows:

For lower holds, the centroid of the space, for tween decks, the actual Kg of the cargo. The righting levers for GZ in meters at angles of heel in degrees are as shown in the table:

Angle of heel	0	5	10	15	20	25	30	35	40	45	50
GZ ordinate	0	0.09	0.21	0.35	0.45	0.51	0.55	0.58	0.59	0.58	0.55

a. Graphically determine the angle of list in the event of a shift of grain.

b. Calculate the enclosed area between the GZ curve and the grain heeling arm line.

Q.2 A boxed shaped tank of dimensions 35 x 15 x 10 mtrs had an ullage of 5.7 mtrs at 27^{O}C after completion of loading. Location of ullage port is 1 mtr above the deck, 2 mtrs port of center line and 4 mtrs from aft bulkhead. LBP of the vessel is 120 mtrs. Vessel was listed 2^O to port and trimmed 2.5 mtrs by stern at the time of taking the ullage. Density of oil is 0.8150 t/cbm at 15^{O}C. Find:

a. Weight of oil in vacuum

b. Volume of oil in the tank if temperature increases to 36^{O}C during the voyage.

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.

b. Describe about the register for ships lifting appliances 1990.

PART B

Q.4 Explain MARPOL minimum criteria w.r.t. to the number of tanks to be washed, also explain in brief the content of COW checklist.

Q.5 a. Describe with neat sketches how a gas tanker is classified by the IGC code as per its survival capability.

b. Define solidifying & high viscous Category "Y" cargoes as per MARPOL Annex II.

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

a. Shipper's declaration b. Meaning if Segregation table shows 3.

c. IMDG Class 1 stowage requirements on passenger ships.

Q.7 a. As per IMO MSC Circular, state what are the reasons for fumigation of cargo holds and the requirements and procedures for in transit fumigation.

b. State under the 13 paragraphs of IMSBC Code Appendix 1, the requirements for carriage of iron ore in bulk on a bulk carrier.

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

Q.9 A container loaded on deck containing IMDG cargo was found to be dripping 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.

Q.10 Enumerate precaution before loading / during voyage / on delivery of reefer cargoes.

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GOVERNMENT OF INDIA

Date: - 13th July-2023 **Paper 2**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

PART - A

Q.1 M.V. 'Hindship' arrives at a river port in a partly loaded condition with draft F 6.65 m, A 6.95 m, Mid 6.76 m in water of RD 1.010. Calculate the maximum quantity of cargo she can load if she is to sail in summer zone on an even keel in salt water with expected sag of 8 cm. 56 t of fuel and FW will be consumed in port and 20t during down river passage. The draft marks are 2m fwd of FP 2m abaft of amidships and 3m abaft AP.

Q.2 Find the final ullage using a UTI gauge, when 3,200 mt of Gas oil (density 0.8860 ts/m^3 in vacuum) is blended with 2,300 cubic meters of Diesel oil at 43^{O}C (density 0.8693 ts/m^3 in vacuum) in a box shaped tank 28.5m x 18m x 15m (L x B x D) on board a ship of LBP 196.4m, trimmed 1.2 m by head and listed 3 deg to port. Ullage port for this tank is located 5.8 m forward of the after bulkhead 4.7m to stbd of the centerline and 112 cms above the top of the tank. Final temperature on completion of blending was found to be 20^{O}deg C.

Q.3 a) Describe the common damage/ defects that may occur on watertight transverse bulkheads situated at the ends of dry cargo holds on a bulk carrier.
b) Define authorized person, responsible person and loose gears as per Docks workers Safety, Health and Welfare Regulations 1990.

PART – B

Q.4 Explain with neat sketch working principle of any type of oxygen analyser & explosimeter.

Q.5 a) Explain briefly any five hazards of chemical cargoes & what control measures are taken on chemical tanker to reduce risks from those hazards.
b) Describe with a diagram about a LNG ships membrane tank structure.

Q.6 As per IMDG Code, describe following: -
i) EmS ii) MFAG iii) Segregation of dangerous goods iv) Dangerous goods manifest
v) Various types of magazines for carriage of explosives.

Q.7 List out the hazards and procedures for loading concentrate.

Q.8 As per IMO Grain code describe briefly with sketches various methods of lashing & securing grain in partially filled & fully filled compartments.

Q.9 a) Write notes on Bay plans for containers.
b) Explain torsional stresses and how will you rectify it?

Q.10 a) What are brine solutions? List out the advantages of a brine trap.
b) What preparations / precautions you will take during voyage in order to protect cargoes which are liable to freeze?

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GOVERNMENT OF INDIA

Date: - 13th July-2023 **Paper 1**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. 'Hindship' is at a draft of F 9.20 m, A 9.30 m, mid 9.30 m, in water of RD 1.005. The draft marks are 2 m aft of FP, 1.5 m aft of midships and 3 m ford of AP. She is to shift to a berth where a depth of water is 6.5 m. Vessel is required to have 0.5m of under keel clearance. Calculate: the minimum quantity of cargo to discharge if after discharging that cargo she is expected to sag by 10 cms.

Q.2 A box shaped cargo oil tank 30m x 20 m x 15 m is to be loaded with crude oil at the temperature of 24^{O}C. Density at 15^{O}C in vacuum = 0.8550 kg/litre. If 4% of the volume of the tank is to be left for expansion, calculate the quantity of oil loaded and the final ullage by the measuring tape at the ullage port located 2m forward of aft bulkhead, 1m about tank top and 3 m to the port of center line of the tank. LBP = 240M, trim = 3m by astern. List = ½ ^{O}(S).

Q.3 What all are the procedure for testing derricks and cranes? Describe with an example?

Q.4 Explain the complete procedure of heating the cargo on oil tankers covering the commercial / safety / operational aspects of the system.

Q.5 Explain the procedure of cargo operation i.e. loading and discharging on LNG? What is re-liquefaction of gas?

Q.6 a) What is the purpose of Marking and labelling as per IMDG code?
b) Enumerate the precautions you will observe while loading / discharging dangerous cargo.

Q.7 As per IMSBC code what are the precautions to be observed while loading coal cargoes in bulk?

Q.8 What are the dangers associated with shipment of grain cargoes. What are the different methods available to reduce shifting of cargoes?

Q.9 a) As a chief officer what preparation you will take prior loading vehicle on a RO-RO ship?
b) What is CSC and Customer plate on a container and what all details does it carry? Explain.

Q.10 How will you prepare a refer space for loading chilled cargo. Describe the importance of controlling atmosphere in cargo spaces, how it is achieved.

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GOVERNMENT OF INDIA

Date: - 11th April-2023 **Paper - 2**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.** Attempt any **five questions** from **Part B** 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 the following drafts F 8.65 m, A 8.89 m, Mid 8.81 m. Density of dockwater 1.016 weights on board: H.O. 350 t, D.O. 135 t, FW 162 t, L.O. 22 t, and unpumpable ballast 54 t the constant and stores as determined on completion of discharge was 160 t. Calculate the quantity of cargo discharged. Draft marks are located 2 m aft of FP 4 m ford of AP and 1 m ford of midship.

Q.2 A crude oil tanker of LBP 270 m, has a box shaped cargo tank of dimensions L 40m x B 27m x D 18m. On completion of unloading cargo, the dip was observed as 12 cm, when vessel was upright and trimmed 3m by stern. The sounding pipe was located 5 m forward of the aft bulkhead and 0.9 m above the deck. Calculate the quantity of cargo on board (OBQ).

Q.3 a) Describe the test procedures and the means for ensuring weather tightness of hatch covers on bulk carrier to load grain in bulk.
b) Describe the SOLAS 1974 / Loadline 1966 and Class requirements for approved loadicator on board cargo ships.
c) Briefly state the test and certification procedure for approved loadicator.

PART – B

Q.4 a) Sketch a general layout of an Inert Gas System of an Oil Tanker and describe its operation step by step.
b) Differentiate between a P.V. Valve and P.V. Breaker in a tanker.

Q.5 a) State the content of Procedure and Arrangements (P & A) Manual as required under Annex II of MARPOL 73-78.
b} Explain the operation of the re-liquefaction plant is liquefied gas in tanker.

Q.6 Explain the following with respect to IMDG code

a) Dangerous Goods Manifest b) Subsidiary risk label c) Segregation table
d) Stowage Category e) Compatibility

Q.7 What are the hazards and procedures for loading coal in a Bulk carrier?

Q.8 As per IMO Grain code, describe briefly with sketches various methods of reducing grain heeling moments on a ship loaded with grain.

Q.9 a) Prepare a Planned Maintenance System for hatch-covers.
b) What are the lashing requirements for Timber deck cargo as per "code of Safe Practice for Timber Deck Cargo"?

Q.10 What all factors are required to be considered into planning and stowage of containers?

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GOVERNMENT OF INDIA

Date: - 11th April-2023 **Paper 1**

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

PART – A

Q.1 A vessel with a trim of 3.3 mtrs by stern arrived at load port with 8 cms of water in the cargo tank. Dimensions of the tank are 35 m x 28 m x 20 m and LBP of the vessel is 160 m. Location of ullage port is 0.8 m above deck and 4 mtrs from aft bulkhead. The tank was loaded with oil cargo and ullage taken by radar gauge upon completion of loading was 3.27 m at temperature of 27^{O}C. The vessel had a trim of 1.8 m by stern after completion of loading. Location of Radar gauge is 0.5 mtrs above deck and 5 m from aft bulkhead. Density cargo at 15^{O}C is 0.8450 t/cbm. Calculate the quantity of cargo loading in this tank.

Q.2 Using ASTM tables, calculate the quantity of white oil in a rectangular tank of a ship of LBP 120m, trimmed 2.5m by the stern. The dimensions of the tank are 35m x 15m x 10m. The ullage port of located 1m above the deck, 3m from the tanks aft bulk head and 2m to the port of the centreline. The ullage was taken by the sonic tape and was measured as 5.7m and a water cut of 10 cm was obtained. The temperature of the oil is 27 Deg C and the density of oil at 15 Deg C is 815 Kg/m^3.

Q.3 a) Describe requirements for periodic thorough examination and inspection of cargo gear.
b) Describe the maintenance of wire ropes, blocks, shackles, hooks, sheaves, pulleys & slings.

PART – B

Q.4 Sketch and describe IG system of a crude oil tanker. List all the alarms associated with it.

Q.5 Write notes on following w.r.t. to chemical tankers:
i) Cargo Pumps ii) P & A Manual iii) Dedicated / parcel tankers

Q.6 a) List out the documents required prior loading IMDG cargo.
b) List down the precautions for loading / unloading Class 1 IMDG cargoes.

Q.7 a) Describe the stability criteria for ships carrying grain in bulk without having document of authorization.
b) Define “Separated from” and “Separated by a complete compartment or hold from” as per IMDG Code.

Q.8 a) With the help of neat sketches describe securing arrangements of steel coils.
b) With help of neat block diagram explain the refrigeration system (Brine Cooling) on reefer ships.

Q.9 a) Describe the hazards associated with coal cargoes and precautions to be taken while carrying it.
b) Explain the purpose and objectives of IMSBC code.

Q.10 Describe the general principles and practice to be followed in the stowage & securing non standardized cargoes as given in the code of safe practice for cargo stowage and securing.

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GOVERNMENT OF INDIA

Date: - 6th Jan-2023

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

PART – As

Q.1 M.V.'Hindship' arrived port in a located condition with drafts F 9.20 m, A 9.30 m, Midship 9.30 m in water density 1.005 t/m^3. Calculate quantity of cargo discharged if the ship 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.

Q.2 A box shaped cargo tank 40m x 22m x 18m was observed to have a sounding of 15 cm by sounding rod. Ullage reference point was located at the tank top, 3m forward of aft bulkhead. Vessel was trimmed 1m by stern and LBP of vessel was 255m. Upon completion of loading in the tank, vessel was even keel and ullage of tank by sonic gauge was 1.10m. Calculate the quantity of oil loaded in the tank, if the observed temperature was 30^{O}C and API gravity was 30.5 in both cases.

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

PART – B

Q.4 a) What is a PV breaker? How will you ensure that it is protecting the cargo tanks effectively?
b) You are the C/off to Crude oil tanker. Explain in proper sequence the procedures to be followed for unloading of cargo and COW in an oil tanker.

Q.5 a) What are the features of "certificate of fitness" on a Gas/chemical carrier? What is the use of P & A Manual on a chemical tanker?
b) Explain in proper sequence the procedures of preparation and then loading operations of full cargo of LNG.

Q.6 What information is required to be provided by shipper when loading packaged dangerous cargoes? What measures will you take to ensure a safe stowage and carriage of explosives?

Q.7 What precautions are recommended when loading concentrates as per IMSBC code.

Q.8 a) Describe the procedures to check weather tightness of hatch covers with their advantages and disadvantages.
b) Describe the precautions to be taken if cargo has to be carried under Fumigation.

Q.9 a) State the lashing requirements for Timber deck cargo as per Code of Safe Practice for Ships Carrying Timber Deck Cargo.
b) With the help of neat sketch describe general outline of refrigeration system (Brine Cooling) on Reefer ships.

Q.10 a) Explain the precautions to be taken when handling dangerous cargoes.
b) Describe the vulnerable areas on ships requiring particular attention against infestation.

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GOVERNMENT OF INDIA

Date: - 4th Nov-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

PART – A

Q.1 A vessel is loaded with grain in bulk of S.F. 1.80 m^3/T. Her displacement in final condition is 68000 t. KM of 11.40m and FSM is 4400 tm. Two the holds are partly filled and the VHM of the holds put together is 3000. All other holds are full and the total VHM of the filled compartments is 18800 m^4. KG of the holds was used to determine the KG of the ship and is known to be 10.48m.

The KN values of the ship in this condition are:

HEEL	12^O	15^O	30^O	40^O	45^O	60^O
KN	2.78	3.51	7.033	9.36	10.21	11.28

Determine if she complies with Intact Stability Criteria for vessels laden with Grain in bulk.

Q.2 M.V. Hindship arrived in roads (RD 1.025), loaded with cargo of grain in bulk with the following drafts: Fwd(P) 8.69 m, (S) 8.73 m, Aft (P) 9.95 m, (S) 10.11 m, Mid-ship (P) 9.26 m & (S) 9.53 m. 5 days later the ship is to be berthed in port with an even keel draft of 6.75m.

Calculate the minimum quantity of cargo to lighter at anchorage if the dock water RD is 1.023. She is expected to consume 3.5t of DO and 22t of FW daily while at anchorage. Her forward perpendicular (FP) is 3.5 m forward to the forward draft marks, her after draft marked are painted 5.8 m forward of the after perpendicular (AP) and the mid-ship marks are located 2.2 m forward of Mid length.

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.

b) Describe about the register for ships lifting appliance 1990.

PART – B

Q.4 Define describe the following:-

a) Dirty Ballast b) Cloud Point c) Cargo Eductor

d) Reid vapour pressure e) TLV - TWA

Q.5 Write short notes on following:

a) Bill of lading b) Responsible c) Tallying of cargo

d) Criteria for discarding wire rope.

Q.6) a) Write in brief how a tank of a fully refrigerated gas tanker will be prepared for loading assuming a ship out of yard.

b) Make a table showing control of discharge of category X, Y & Z NLS as per Marpol Annex II.

Q.7 Enumerate the main hazards associated with carriage of Concentrates in bulk as per IMSBC Code. Also, explain the precautions to be taken during loading of heavy density cargoes.

Q.8 a) Explain in detail the stability criteria to be complied with for grain loading.

b) Explain any one method for securing path surface in filled trimmed compartment as per grain code.

Q.9 a) Write short notes on Container Code.

b) With respect to stresses and corrosion, discuss the problem areas in Ro-Ro ships.

Q.10 a) Describe precautions required to be taken while loading heavy lifts by using ship's gear.

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

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GOVERNMENT OF INDIA

Date: - 14th Sept-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.** Attempt any **five questions** from **Part B** 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 drafts F: 5.80 m, Mid: 6.38 m & A: 6.80 m in RD of 1.025. After loading 1250 mt of cargo she sailed on an even keel draft but with 5 cms of hog in seawater of RD 1.025. Calculate her departure drafts F, A & Midships if she sailed in an upright condition after consumption of 9.25 mt/ DO, 43 mt/FW in port & also replenished 200 mt/FW & 333 mt/HO during her stay at this port.

Q.2 On completion of cargo, at the time of sounding the tanks, dip was observed to be 9 cm. The vessel was upright and trimmed 3 m by stern. Dimension of the tank were 36 m x 27 m x 18 m. LBP of the vessel was 270 m. Calculate the On Board Quantity (OBQ), given in the sounding pipe was located 5 m from the aft bulkhead and 0.9 m above deck.

Q.3 a) Enumerate the duties of Dock Safety Inspector.
b) Describe the testing requirements for lifting appliances & loose gears.

PART – B

Q.4 a) What is the purpose of Crude Oil Washing (COW), explain the hazards associated with it.
b) What is the purpose of Pressure Vacuum (P.V.) breaker and how does it work?

Q.5 With reference to Liquified gas carriers, write short notes on:
a) IGC code b) Semi refrigerated ships c) Deep well pumps

Q.6) Write short notes on the following terms under IMDG code:
a) EmS b) Dangerous goods manifest c) Types of segregation
d) Labels & Placards.

Q.7 a) Describe the categories of solid bulk cargoes and documentation required accordingly as prescribed in IMSBC Code.
b) Enumerate the hazards associated with carriage of Coal and the procedure of ventilation of cargo holds during voyage.

Q.8 Explain the methods to reduce Grain heeling moments in order to meet Grain stability criteria.

Q.9 a) Extra precautions will you carry out while loading reefer containers?
b) Briefly explain precautions during loading of vehicles in Ro-Ro spaces.

Q.10 a) What are the hazards associated with Timber Deck Cargo in rough weather?
b) Explain the precautions prior and during loading of heavy lifts?

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GOVERNMENT OF INDIA

Date: - 10th Aug-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.** Attempt any **five questions** from **Part B** 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) 8.88 m, (S) 8.92 m, Mid (P) 8.96 m, (S) 9.16 m, A (P) 9.24 m, (S) 9.36 m respectively. Density of DW = 1.016 t/m^3. During her port stay she consumed 25t of FW and 5 t of D.O. She received 600 t of H.O. She sailed from the port with drafts 6.00 m, F and A and 6.04m mid draft. Calculate the quantity of cargo discharged at the port, if the for'd draft marks are 2 m for'd of FP, after marks 3 m for'd of AP and mid marks are 1 m for'd of midships.

Q.2 On an oil tanker, a box shaped cargo oil tank measuring 32 x 17 x 18 m (L X B X H) had sounding of 12 cm by UTI tape from an ullage port. Find volume of oil in this tank if ullage port is 0.8m above top of tank, 6 m forward of aft bulkhead of tank and 4 m starboard of tank centerline. LBP 302 m, trim 5.5 m by stern and list zero.

Q.3 a) Prepare a planned maintenance of hatch covers.
b) Describe the duties of dock inspector.

PART – B

Q.4 a) Write any ten items of COW checklist which a chief officer needs to follow before arrival discharge port / prior start of COW.
b) Differentiate between explosimeter and tankscope.

Q.5 a) Explain briefly: i) IMO Type 2 chemical tanker
ii) Integral Gravity Tank on chemical tanker
b) Draw and describe a membrane tank of a gas tanker. Which liquefied gas would be carried in this type of tank?

Q.6) Write short notes on following:
a) Causes of cargo shift on a general cargo ship.
b) MFAG
c) Responsible Person
d) Competent Person

Q.7 a) Describe the limitations of draft survey.
b) Describe the preparations to prepare a cargo hold for loading reefer cargo.

Q.8 a) Discuss the condition under which a ship without a DOA carry grain in bulk.
b) Explain the precautions to be taken when handling dangerous cargoes.

Q.9 a) List items to be checked regarding the safety of life, cargo, property, environment and security during a deck watch.
b) Explain the method of identifying stowage location of a container on cellular container vessel.

Q.10 Explain the preparation to be made and precautions to be taken when loading heavy lift with ship's gear.

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GOVERNMENT OF INDIA

Date: - 11th July-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part A are compulsory.** Attempt any **five questions** from **Part B** 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) 8.70 m, A(P) 8.85 m, A (S) 8.93 m, Mid (P) 8.75 m and Mid (S) 8.87 m in dock water RD 1.018. After discharging part cargo she has to shift to another berth with a hog of 5 cm. Where maximum draft allowed is 5.90m. Calculate the minimum quantity of cargo to discharge. During the stay at first berth she consumed 10t of DO and 14t of fresh water. Draft marks are located 2m aft of FP, 4m forward of AP and 1m forward of midship.

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 15^{O}C is 0.8424 g/cc. The final ullage by UTI tape is observed to be 1.86m and temperature of cargo is 34.7^{O}C. Find the quantity of cargo loaded if ullage port is 80 cm above the top of tanks, 5 m forward of aft bulkhead of tank and 4 m starboard of tank centerline. LBP 255 m, trim 5 m by stern and 2.5^{O} stbd list.

Q.3 Describe the common damage / defects that may occur in cargo holds of a bulk carrier and the actions to be taken to avoid such damages.

PART – B

Q.4 Write short notes on:
a) Dirty Ballast b) PV Valve c) Wet Type Deck Seal

Q.5 a) Write the general reactivity hazards of Noxious Liquid Substances carried on chemical tankers and what control measures are taken to reduce risk due to these hazards?
b) With reference to 'Code of safe practice for carriage of Grain'
i) Define i) DOA ii) Stability criteria for ships with DOA & without DOA.

Q.6) Write short notes on following:
a) MFAG b) Stowage Category c) Compatibility Group Coded d) EmS

Q.7 a) Describe the hazards associated with concentrates.
b) Describe loading / unloading plan as per BLU Code.

Q.8 a) Explain in detail any two methods for securing of free grain surface in a partly filled compartment.
b) Describe the stability criteria for ships carrying grain in bulk.

Q.9 a) Describe Rolling Period Test for ships carrying timber deck cargoes and limitations of the test.
b) Information & its purpose on a CSC plate of a cargo container.

Q.10 a) List the preparations and precautions to be undertaken for loading refrigerated cargo.
b) Explain Ship Sweat and cargo sweat and the criteria whether to ventilate the cargo hold or not.

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GOVERNMENT OF INDIA

Date: - 6th June-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

PART – A

Q.1 M. V. "Hindship" is at draft of F = 9.5, A = 9.6, N = 9.6 m in 1.015. The draft marks are 3m aft of FP, 1.5 m aft of midship & 5 m forward of AP. She is to shift to a berth where the max Permissible draft is 7.0 meters. Calculate the amount of cargo to discharge if after discharging that cargo she is expected to hog by 10 cms.

Q.2 A box shaped tank L 30 m x B 18 m x 20 m containing crude oil of density at $15^{O}C$ = 0.8275 t/m^3 had an ullage of 1.60 m as measured by sonic tape. The ullage port was located 2.5m fwd of the aft bulkhead. 1 m above the tank top & 3 m to port of Centre line of tank. Trim observed was 3m & the vessel listed 1^{O} to stbd. Observe temp $32.5^{O}C$, Calculate the quantity of oil in tank if the LBP of vessel was 220 m.

Q.3 a) Enumerate various test procedures available for checking weather tightness of hatch covers and discuss their effectiveness.
b) Describe with the help of diagram, the maintenance of MacGregor type steel hatch covers on board bulk carrier.

PART – B

Q.4 a) Draw a block diagram of IG system used on a VLCC showing various components in E/R and deck area.
b) Define following with respect to Oil Tankers:
i) Reid Vapour Pressure ii) Pour Point iii) TLV iv) Sour Crude

Q.5 a) What is the regulatory requirement of doing a "Prewash" in relation to NLS? What are the conditions under which Prewash can be exempted?
b) How IGC classifies gas tankers as per their survival capability? Define & describe with labelled diagrams.

Q.6) What information is required to be provided by shipper when loading packaged dangerous cargoes? What measures will you take to ensure safe stowage and carriage of explosives?

Q.7 Briefly explain the classification of bulk cargoes as per IMSBC code. Describe the test procedures for determining angle of repose and Flow Moisture Point (FMP) on board?

Q.8 Explain with aid of sketches for a cargo of grain in bulk.
a) Bundling b) Strapping c) Volumetric heeling moments.

Q.9 State your action as a Mate in the event of observing damaged cargo during discharging operation on board container ships.

Q.10 Describe with suitable sketches "Hog wire" and "Wiggle wire" arrangement of lashings of Timber deck cargo as per the requirement of Timber Code.

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GOVERNMENT OF INDIA

Date: - 9th May-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 in part are compulsory.** Attempt any **five questions** from **Part B** 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) 8.70 m, A (P) 8.85 m, A (S) 8.93 m, Mid (P) 8.75 m 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 5 cm, 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, 4 m forward of AP and 1 m forward of midship.

Q.2 An oil tanker, a box shaped cargo oil tank measuring 32 x 17 x 18 m (L X B X H) had sounding of 12 cm by UTI tape from an ullage port. Find volume of oil in this tank if ullage port is 0.8m above top of tank, 6m forward of aft bulkhead of tank and 4m starboard of tank centerline. LBP 302 m, trim 5.5m by stern and list zero.

Q.3 Describe the common damage / defects that may occur in cargo holds of a bulk carrier and the actions to be taken to avoid such damages.

PART – B

Q.4 a) Sketch a general layout of an Inert Gas System of an Oil Tanker and describe its operation step by step.
b) Differentiate between a P. V. Valve and P. V. breaker in a tanker.

Q.5 a) Write the general reactivity hazards of Noxious liquid substances carried on chemical tankers and what control measures are taken to reduce risk due to these hazards?
b) With reference to 'Code of safe practice for carriage of Grain'.
i) Define i) DOA ii) stability criteria for ships with DOA & without DOA

Q.6) What information is required to be provided by shipper when loading packaged dangerous cargoes? What measures will you take to ensure safe stowage and carriage of explosives?

Q.7 a) Describe the hazards associated with concentrates.
b) Describe loading / unloading plan as per BLU Code.

Q.8 With respect to grain explain the following:
a) Intact stability requirement for ship carrying grain
b) DOA
c) Grain loading stability booklet.

Q.9 a) Describe Rolling Period Test for ships carrying timber deck cargoes and limitations of the test.
b) Information & its purpose on a CSC plate of a cargo container.

Q.10 a) What preparations will you carry out prior loading refrigerated cargoes?
b) What all factors are required to be considered into planning and stowage of containers?

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GOVERNMENT OF INDIA

Date: - 10th March-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 are compulsory.** Attempt any **five questions** from **Part B** of the remaining **seven questions.**
2. All questions carry equal marks i.e. 25 Marks each.

PART – A

Q.1 M. V. 'Hindship' is at a draft of F 08.10m, A 08.20m, Mid 8.20m, in water of RD – 1.015. The draft marks are 3m aft of F.P. 1.5m aft of midship & 5 m ford of A.P. She is to be berth where the maximum permissible draft is 6.00m. Calculate the amount of cargo to discharge if after discharging that cargo she is expected to hog by 15 cm.

Q.2 An oil tanker of LBP --> 220 m, has a box shaped tank of dimensions 36m x 18m x 18m is loaded with oil on completion of ullage as measured from a sonic tape was observed to be 1.20m @ temp $37^{O}C$ a water dip ullage of 18.96m was also found. The ullage port was located 1.1m above tank top & 2.0 fwd of aft bulkhead. Vessel was trimmed 3 m by stern. Terminal gave the density $15^{O}C = 0.8145$ t/m^3. Determine the quantity of oil in the tank.

Q.3 Explain the importance of assessing defects and damage to cargo spaces after each cargo operation. Briefly describe the procedure for same.

PART – B

Q.4 Differentiate between a PV valve and PV Breaker. Draw the sketches of both.

Q.5 a) Describe purpose and objective of Procedure and Arrangements (P & A) manual as required under Annex II of MARPOL 73/78. List its contents.
b) Describe the types of gas carriers with reference to nature of cargo and its protection in case of accident as categorized in the IGS code.

Q.6 With reference to IMDG code, write short notes on following:
a) How are different types of class I goods identified and segregated?
b) List explosives which may be carried on passenger ships.

Q.7 Enumerate the hazards associated with coal and precautions to be taken while loading & during carriage.

Q.8 With respect to grain explain the following:
a) Intact stability requirement for ship carrying grain.
b) DOA
c) Grain loading stability booklet.

Q.9 a) Write short notes on Container code – Convention on Safe Containers (CSC).
b) Explain the need to monitor atmosphere in Ro-Ro spaces.

Q.10 Describe the conditions for carrying Timber Cargo on Deck as stipulated in the Timber Code?

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GOVERNMENT OF INDIA

Date: - 6th January-2022

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 are compulsory.** Attempt any **five questions** from **Part B** 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: Ford 7.25mt, Aft: 7.95m and Mid ship: 7.55m. What maximum cargo quantity will you order to load if she has to sail to even keel from this port (Tropical zone) but is expected to be sagging by 4cm on completion of loading? 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?

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, ullage as measured from a sonic tape was observed to be 1.24m and temp was $37^{O}C$. A water dip ullage of 20.94 m was also found. The ullage port was located 1.1 above the tank top and 1.6 m fwd of aft bulkhead. Vessel was trimmed 3 m stern. Terminal gave the density of oil @ $15^{O}C$ as 0.8145 t/m^3. Determine the quantity of oil in the tank.

Q.3 a) Enumerate various test procedure available for checking weather tightness of hatch covers and their effectiveness.
b) Define authorized person, responsible person and loose gears as per Dock workers Safety, Health and Welfare regulation 1990.

PART – B

Q.4 a) Describe the precautions to be taken on an oil tanker during loading, discharging and tank cleaning against static electricity.
b) Differentiate between a Pressure Vacuum Valve and Pressure Vacuum breaker in a tanker.

Q.5 a) What are various types of gas carriers defined in IGC Code.
b) Write notes on following w.r.t. to chemical tankers:
i) Types of Chemical Tankers ii) Procedure & arrangement Manual (P & A)

Q.6 Write short notes on the following terms under IMDG code:
a) Medical First Aid Guide (MFAG) b) Subsidiary Risk Label
c) Types of packaging group d) Documents required.

Q.7 a) Briefly state the classification of solid bulk cargoes as prescribed in IMSBC code.
b) Enumerate the hazards associated with Direct Reduced Iron and precautions to be taken during loading.

Q.8 With reference to 'code of safe practice for carriage of grain'. What are the recommendations for safe carriage of grain with respect to intact stability and securing of grain surfaces?

Q.9 a) What all factors are required to be considered into planning and stowage of containers?
b) Briefly explain the need to monitor atmosphere in Ro-Ro spaces.

Q.10 a) What preparations will you carry out prior loading refrigerated cargoes?
b) State the lashing requirements for Timber Deck cargo as per code of safe practice for ship's carrying Timber Deck Cargo.

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GOVERNMENT OF INDIA

Date: - 11th November-2021

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 are compulsory.** Attempt any **five questions** from **Part B** 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 drafts F 5.60 m, A 6.60 m, Midship 6.20 m in water of density 1.012 t/m^3. Calculate the quantity of cargo she can load if she is to sail into Tropical zone on an even keel in SW with expected sag of 5 cms. 60 T of fuel and FW is expected to be consumed in port and she is to receive 300 T of FW. The Ford draft marks are 2 m ford of FP, 2 m aft of midships and 1 m ford of AP.

Q.2 A crude oil tanker of LBP 228 m has a box shaped tank of Dimensions 32 x 20 x 20 m and trimmed 1 m by stern. Initial ullage of 0.60m is measured by Radar beam level gauge fitted 3 m ford of aft bhd on centerline of the tank. Given the density of oil at 15^{O}C = 0.810t/m^3 and observed temp is 24^{O}C. On completion of unloading v/l trimmed 3.8 m by stern & ullage of tank was 19.88m. Calculate the quantity of oil discharged.

Q.3 a) With reference to Dock Workers (Safety, Health and Welfare) act 1990 define “Authorized person”, “Competent person” and “Responsible person”.
b) Describe the methods available to check the weather tightness of hatch covers and state how effective and reliable are these methods.

PART – B

Q.4 a) Sketch a general layout of an Inert Gas System of an Oil Tanker and describe its operation step by step.
b) Differentiate between a P.V. Valve and P.V. breaker in a tanker.

Q.5 a) What are the various types of gas carriers considering survival capability as defined in IGC code?
b) A Chemical tanker discharges phosphoric acid at a port in Sikka and is bound for Morocco for loading. Describe the operations she will perform with reference to cleaning of tanks so as to be ready on arrival to load next cargo?

Q.6 With reference to IMDG code, write short notes on following:

i) Shipper's declaration of dangerous goods ii) Segregation of dangerous goods.

iii) Dangerous goods Manifest iv) Emergency procedures

Q.7 a) Enumerate the main hazards associated with the carriage of Direct Reduced Iron (DRI) and precautions to be taken prior loading, during loading and during the passage?

b) State documents as a Mate you would sign after loading of this Cargo.

Q.8 With reference to 'Code of safe practice for carriage of Grain'.

a) What are the recommendations for safe carriage of grain with respect to intact stability.

b) Securing of grain surfaces?

Q.9 a) In respect of cellular container ships, briefly describe the following:

i) Anti heeling tanks ii) Torsional Stresses iii) Stack weight

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

Q.10 a) Describe various precautions you will take as a chief officer before and during loading of a boiler weighing 200 tonnes. Draw a neat sketch showing securing arrangements for this cargo.

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GOVERNMENT OF INDIA

Date: - 7th Sept-2021

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship arrived port with drafts F: 7.23 m, M: 8.33m & A: 9.23 m in RD of 1.014. After discharging partly she sailed drawing 6.2 m on even keel with 8 cms sag in water of R.D. 1.022. Calculate how much cargo she discharged if she had replenished in this port DO / 116 MT & FW / 245 MT & Consumed 8 MT of DO and FW during her port stay.

Q.2 Using a UTI gauge from the ullage port, a box shaped cargo oil tank 20m x 15m x 11.5m registered an oil dip of 27 cm with water cut of 10 cms on arrival at as loading terminal. Calculate the OBQ? (Trim: 3m by stern, LBP: 171.87m and ullage port is located 6m forward of the after bulkhead).

Q.3 Explain the sequence of closing the hatch covers and how will you carry out the maintenance and inspection of the cargo gears? What is plan maintenance system and how is it used on board?

Q.4 Explain the procedure of cargo heating on oil tankers, also explain what is hammering and why does it take place.

Q.5 Describe different methods of carriage of liquefied gases. What is re-liquefaction of gas? How is it done on gas tankers?

Q.6 With reference to IMDG code explain segregation criteria for carriage of dangerous goods. Justify your answers with proper sketches.

Q.7 a) Briefly state the classification of solid bulk cargoes as prescribed in the IMSBC code.
b) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading on board bulk carrier.
c) State documents as a Mate you would sign after loading of this cargo.

Q.8 a) How will you secure grain cargo in a partially filled compartment as a chief officer and why? Explain with diagram.
b) Describe various types of containers with diagram.

Q.9 a) What is the procedure of loading cargo on RO-RO ships? What are the safety features for the water-tight doors on these ships?
b) Describe various types of containers with diagram.

Q.10 Describe the general principles and practice to be followed in the stowage & securing non-standardized cargoes as given in the code of safe practice for cargo stowage and securing.

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GOVERNMENT OF INDIA

Date: - 9th July-2021

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship arrived port with the following drafts: F 8.65m, A 8.89m, Mid 8.81m. Density of Dockwater 1.018. Weights on board: H.O. 250T, D.O. 85t, FW 112t, L.O. 18t, and unpumpable ballast 45t. If the constant and stores as determined on completion of discharge was 150t, calculate the quantity of cargo discharged. Draft marks located 2m aft of FP. 4m ford of AP and 1m ford of midship.

Q.2 A vessel of 108m LBP arrives discharge port with 2m stern trim and 2^{O} list to port. A box shaped cargo tank, measures 26 x 16 x 9.3 (L x B x D) has ullage of 3.52m by sonic tape, temp. 42.3^{O}C, noted from ullage port located 4.5m forward of the after bulkhead, 3.8m to stbd. of the centerline and 114 cms above the top of the tank. On completion of cargo operations 26 cms of dip was noted from the same ullage port when the trim was 4m by stern with no list. Find the quantity of oil discharged & ROB if oil density is 826.3 kgs/cu m in vacuum at 15^{O}.

Q.3 a) Describe the criteria for discarding wire ropes.
b) With reference to Dock Workers (Safety, Health and Welfare) Regulations 1990 describe the requirement for testing and periodical examination of lifting appliances.

Q.4 Define the following:
a) Clean Ballast b) TLV – TWA c) Reid Vapour Pressure
d) Sour Crude e) Cargo Educator

Q.5 a) Describe with neat sketches how a gas tanker is classified by the IGC code as per its survival capability.
b) Define solidifying & high viscous Category "Y" cargoes as per MARPOL Annex II.

Q.6 With reference to IMDG code, write short notes on following:-
i) MFAG ii) Segregation of Dangerous Cargoes iii) Causes of cargo shift

Q.7 a) Explain the main hazards and precautions to be taken with the shipment of DRI in bulk form.
b) Describe the recommended contents of Port and Terminal information book as per code of Practice for Safe Loading and Unloading of Bulk Carriers.

Q.8 a) Describe the preparation of cargo hold for carriage of Refrigerated Cargoes.
b) Describe the various methods to check weather tightness of hatch covers with their advantages and disadvantages.

Q.9 a) Describe the stability criteria for ships to carry bulk grain cargo not having DOA.
b) Describe the contents of Grain Loading Stability Booklet.

Q.10 You have been informed to load a mining equipment of 115 Tonnes by ship's gear. Describe preparations to be made and precautions to be taken to load this cargo safely.

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GOVERNMENT OF INDIA

Date: - 3rd March-2021

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship arrives in D.W. of density 1.005 & the drafts were observed as,

	Port	Stbd		
F	9.090	9.110	Draft Marks	located 4m aft of FP
M	9.280	9.420	Draft Marks	located 3m aft of mid length
A	9.380	9.480	Draft Marks	located 5m forward of AP

After discharge vessel is expected to enter winter zone after 3 days of passage. Consumption is estimated to be 40 T per day during passage. Determine minimum quantity of cargo to discharge if after 3 days passage trim is expected to be 10 cms by stern & a hog of 8 cms.

Q.2 Using ASTM tables calculate the quantity of while oil in a rectangular tanks of ship of LBP 130m, trimmed 1.5m by the Stern. The dimensions of the tanks are 40m x 15m x 10m. The ullage port is located 1m above the deck, 2.5m from the tank's aft bulkhead and 2m to the port of the centerline. The ullage was taken by the sonic tape and was measured as 5.9m and a water cut of 10 cms was obtained. The temperature of the oil $26^{O}C$ and the density of oil at $15^{O}C$ is 820 kg/m^3.

Q.3 As a chief officer, explain the precautions you will take for loading a railway locomotive weighing 60 tons on the deck of a general cargo ship.

Q.4 Write notes on following connected with Chemical / Product Tanker:

A) TLV b) Oxygen Analyser c) Tank Coatings d) Categorization of substances

Q.5 Briefly describe about Liquefied Gas Carriers and the precautions required during loading carriage and discharge of liquefied gases.

Q.6 a) With respect to IMDG code explains segregation criteria for carriage of dangerous goods. Justify your answer with proper sketches.

b) Explain with respect to IMDG Code: i) MFAG ii) EmS.

Q.7 a) State the "recommended contents of port and terminals information books" as given in Appendix – I of the BLU code.

b) Give details of the characteristics, hazards, precautions while loading, carrying, discharging and cleaning of holds for covering coal cargoes.

Q.8 As per IMO grain code, write short notes on:

a) Bundling b) Grain manual and document of authorization c) Stability requirements for vessel loading without DOA.

Q.9 Discuss the planning and precautions required to be taken before loading / unloading / shifting in a cellular Container ship, as chief officer of the vessel.

Q.10 a) With neat diagrams, draw securing of logs on deck of a timber carrier.

b) What are the recommendation as per timber code, for voyage planning and heavy weather?

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GOVERNMENT OF INDIA

Date: - 11th December-2020

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship arrived port is a loaded condition with drafts Fwd = 9.20m, Aft = 9.30m and Mid-Ship = 9.30m in water of density 1.005t/m^3. Calculate quantity of cargo discharged if the ship is to sail out with draft of 6.50m, with an expected hog of 12 cm. The draft marks are 1m aft of forward perpendicular (FP). 1.5m abaft midships & 5m forward of after perpendicular (AP).

Q.2 A box shaped cargo oil tank 30m x 20m x 15m is loaded with crude oil. On completion, ullage found by UTI tape was 2.10 mtrs at 35^{O}C, water cut 20 cm. Calculate the weight of cargo in air density at 15^{O}C in vaccum is 0.8800 kg / ltr, LBP = 210 mtrs, trim 2.0 mtrs by stern ullage port located 3m fwd of aft bulkhead. Assume the reference point for ullage is main deck.

Q.3 How will you carry out the maintenance and inspection of cargo gears? What is the planned maintenance system and how it is used on board?

Q.4 a) Sketch a general layout of IG system an oil tanker and describe its functioning step by step.
b) Discuss the following:-
(i) Hazards associated with COW.
(ii) Checks prior, during after COW.

Q.5 a) Write contents of SMPEP manual? Is it ship specific and who approves it?
b) Under IGC code describe how ships are classified as per the survival capability. Draw sketches to support your answer.

Q.6 Explain the following with respect to the IMDG code:-
a) Dangerous cargo manifest
b) Precautions when working with dangerous goods.
c) Inspections by port authority before loading dangerous goods.

Q.7 a) Enumerate the hazards associated with carriage of DRI and precautions to be taken while making stowage plan for loading.
b) What are the precautions to be taken by ship staff during loading and handling of ballast as per BLU Code?

Q.8 Write short notes on:
a) Document of authorization
b) Grain loading stability booklet

Q.9 a) Discuss the planning and preparations to be done before loading and unloading of vehicles on car carrier.
b) Describe procedures for opening closing and securing of hull opening on a RO-RO ships.

Q.10 What are the factors taken into planning and stowage of containers?

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GOVERNMENT OF INDIA

Date: - 14th Oct-2020

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. 'Hindship' is at a draft of F 9.20 m, A 9.30 m, mid 9.30 m, in water of RD 1.005. The draft marks are 3m aft of FP. 1.5m aft of midships and 5m of midships and 5m ford of AP. She is to shift to a berth where the maximum permissible draft is 6.00 m. Calculate the amount of cargo to discharge if after discharging that cargo she is expected to hog by 10 cms.

Q.2 On completion of cargo, at the time of sounding the tanks, dip was observed to be 8 cm. The vessel was upright and trimmed 2.5 m by stern. Dimensions of the tanks were 36m x 27m x 18m. LBP of the vessel was 270 m. Calculate the onboard quantity (OBQ), given that sounding pipe was located 5m from the aft bulkhead and 0.9m above deck.

Q.3 a) What is the difference between the sweat and leak: also explain how will you carry out hatch cover inspection w.r.t. Load Line Survey?
b) How will you carry out maintenance of Hatch covers also explain various types of Hatch cover with diagram?

Q.4 Explain various advantages and disadvantages of C.O.W. and how often is it carried out? On product carriers how do we carry out tank cleaning?

Q.5 When do we need to carry certificate of fitness and NLS certificate? Why do you need Nitrogen gas on Liquefied Natural Gas, Explain in detail?

Q.6 Write short note on the following terms under IMDG code:
a) Medical First Aid Guide (MFAG) b) Subsidiary Risk Label
c) Types of packaging group d) Segregation and
e) Classification of IMDG Cargo

Q.7 What checks will be carried out for loading solid bulk cargoes also write the hazards associated with carrying the same?

Q.8 Describe briefly various methods of reducing grain heeling moments on a ship loaded with bulk grain? Explain the loading process for the vessels without document of authorization?

Q.9 a) Describe in detail the principle & working of different types of refrigerated containers.
b) What is CSC plate on a container vessel and what all details does it carry? Is custom plate a part of CSC plate? Explain.

Q.10 a) Write the precautions to be taken for loading heavy lifts as a chief officer?
b) Explain various types of cargoes carried at different temperatures and also explain brine what is a brine trap?

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GOVERNMENT OF INDIA

Date: - 6th January-2020

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship arrived port with drafts: F: 5.80m, Mid: 6.38m & A: 6.80m, in RD of 1.025. After loading 1250mt of cargo she sailed on an even keel draft but with 5cms of hog in seawater of RD 1.025. Calculate her departure drafts F, A & Midship if she sailed in an upright condition after consumption of 9.25 mt/ DO, 43 mt/FW in port & also replenished 200 mt/FW & 333 mt/HO during her stay at this port.

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^{O}C. Density of oil at 15^{O}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 centerline. b) Quantity of oil loaded on board (LBP = 220m, Trim 3m by stern and list 1^{O} to starboard).

Q.3 a) Explain the procedure for maintenance of hatch covers.
b) Describe the methods used for testing the weather tightness of hatch covers.

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

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

Q.6 Write a short note on the purpose 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.

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 ore fines.

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.

Q.9 a) Discuss the planning and preparations required before loading and unloading of vehicles on a car carrier.
b) Describe the procedures for opening, closing and securing of hull openings on Ro-Ro ship.

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.

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GOVERNMENT OF INDIA

Date: - 4th October-2019

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship arrived port with the following drafts: F – 8.65m, A – 8.89m, mid – 8.81m. Density of dock water 1.018 weights on board Ho – 250T, Do – 85T, FW – 112T, LO – 18T & un-pump able ballast is 45T. If the constant and stores as determined on completion of discharge was 150T. Calculate the quantity of cargo discharged. Draft marks are located 2m aft of FP, 4m fwd of AP and 1m fwd of midship?

Q.2 An oil tank measures 32m x 20m x 10m. On arrival port 3.22m ullage was measured by sonic tape from ullage port located 4m forward of the after bulkhead, 3m to port side of centerline & 1.82 meters above the top of the tank. LBP = 288m, trim – 3.5m by head & list 4^{O} to port. Cargo temp was 31.5^{O}C. After the lighterage, cargo temp was 27^{O}C & ullage was 8m by tank radar which was located 4m to port of centerline, 9m forward of the after bulkhead & 92 cms above the top of the tank. Trim 2m by stern & list 3^{O} to stbd. If oil density in vacuum at 15^{O}C is 0.8311 t/m^3. Find the quantity of cargo discharged.

Q.3 Explain the various methods for conducting leak detection tests of hatch covers & drawbacks of each method?

Q.4 a) Describe how to empty cargo tanks which are in inert condition are cleaned and made gas free on a very large crude carrier prior to proceeding to dry-docking repairs under statutory / class requirements.
b) With the help of suitable diagrams explain the working principle of educators?

Q.5 a) Describe loading procedures of semi refrigerated LPG tankers in accordance with IGC code and ISM code.
b) State the cargo related documents required on board chemical tankers.

Q.6 Explain the duties of carrier and shipper with respect to the carriage of dangerous goods as per IMDG code.

Q.7 a) With neat diagram explain securing logs on deck ahead of timber carriage. What are the recommendations as per Timber Code for Voyage planning & heavy weather?
b) Describe the maintenance to be carried out on hatch covers.

Q.8 Write short notes on following with respect to the GRAIN code:
a) Bundling and saucering. b) Lashing and Strapping.
c) Strength of grain fittings.

Q.9 Describe the precautions to be taken before/ during loading and unloading of vehicles on a car carrier?

Q.10 Briefly explains the following:
a) Periodic testing of lifting appliances and loose gear.
b) Duties of Dock Safety Inspector
c) Responsible person as per ILO 152.

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GOVERNMENT OF INDIA

Date: - 1st July-2019

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M.V. Hindship floating in dock water of RD 1.016 at the following drafts:

	Port	Stbd
F -	7.21m	7.23m
M -	8.13M	8.28M
A -	9.10M	9.22M

She has on board the followings: 200t FW, 180t ballast, 220t fuel and 110t of stores and constant. If her forward draft marks are 1.2m aft of the forward perpendicular and her aft drafts marks are 2.0m forward of the aft perpendicular, and her midship draft marks are at midship, calculate the amount of cargo on board.

Q.2 A box shaped tank measuring 20 x 11 x 13 (L x B x D) had 193m^3 OBQ (water) on arrival at the loading port. This tank was loaded with 2,135 mt of oil (density 0.8957 kgs/ltr in vacuum at 15^{O}C) loading temperature 11^{O}C. Find the measured ullage using UTI tape from the ullage port located 3m forward of the after bulkhead and 1.14m above the top of the tank. LBP is 181m trim 2.5m by stern.

Q.3 a. Describe the actions to be taken to avoid the detrimental effects on bulk carriers for corrosion, fatigue and improper cargo handling.

b. Describe powers of Dock Inspector as per Dock Worker's (Safety, Health and Welfare) Regulations 1990.

Q.4 Discuss the Hazards of Petroleum with Reference to:-

a) Flammability b) Gas Density c) Toxicity

Q.5 a. What is "BOIL OFF" on an LNG? Explain the role of Nitrogen / Inert gas in case of LNG.

b. What is the purpose of IBC Code and P & A manual carried on chemical tankers?

Q.6 Briefly explain Document of Compliance and manifest as per IMDG code. What are the different classes as per IMDG code?

Q.7 a. Describe the hazards associated with solid bulk cargoes.

b. Describe the precautions to be taken when carrying coal cargo.

Q.8 a. Describe the stability criteria for ships to carry bulk grain cargo having DOA.

b. Explain the points to be taken into consideration for preparing cargo plan of a container ship.

Q.9 a. With respect to stresses and corrosion, discuss the problem areas in RO-RO ships.

b. What is CSC and Custom plate on a container and what all details does it carry?

Q.10 With the help of neat sketches describe the securing of containers on a ship not designed to carry containers as per cargo securing manual.

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GOVERNMENT OF INDIA

Date: - 04th April-2019

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

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

Q.1 M. V. Hindship arrived Vizag port with drafts F: 7.23m, Mid: 8.3m & A: 9.23m in RD of 1.010. After discharging partly she sailed drawing 6.20m on even keel with 8cms sag in water of RD 1.020. Calculate how much cargo she discharged if she has replenished in this port DO/110 mt & FW/240 mt & consumed 12 mt of DO and 65 mt of FW during her port stay.

Q.2 a) An oil tanker has a tank of dimensions 30m x 20m x 20m deep and is loading oil at 38^{O}C. It is desired to leave 2% of the volume of tank for expansions. Calculate the quantity of oil and final ullage assuming that the vessel is at an even keel on completion. Given that R.D. of oil at 25^{O}C = 0.8540. Co-efficient of volume expansion = 0.0006/^{O}C.

b) A tank of dimensions 20mx15mx10m is being loaded with an oil at 30^{O}C (relative density at 20^{O}C = 0.8681). It is desired to leave 3% of the vol. of oil for expansion. Calculate the ullage of the oil and quantity of oil loaded. Given that Co-efficient of vol. expansion = 0.0005/^{O}C.

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

Q.4 Write notes on following w.r.t. to tankers:
i) ISGOTT ii) Slop Tanks iii) Tank cleaning & Gas freeing iv) Deck Seal v) P/V Valve

Q.5 Describe the different methods of carriage off liquefied gases. What is re—liquefaction of gas? How is it done on gas tankers?

Q.6 a) Write notes on IMDG code.
b) Write notes on dangerous goods manifest.

Q.7 Enumerate the main hazards associated with the carriage of Coal in bulk. Also, explain the precautions to be taken during its loading & carriage as per IMSBC Code.

Q.8 With reference to 'Code of safe practice for carriage of Grain'.
a) Define i) DOA ii) Stability criteria for ships with DOA & without DOA
b) What are the various methods of reducing grain heeling moments on a ship loaded with grain in bulk, describe any one of them.

Q.9 a) Describe the procedures for loading and carriage of refrigerated containers.
b) Briefly explain the need to monitor atmosphere in Ro-Ro spaces.

Q.10 a) Explain stowage and securing of deck timber cargo.
b) Describe general outline of refrigeration systems onboard Reefer ships.

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GOVERNMENT OF INDIA

Date: - 08th Jan-2019

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 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 in a partly loaded condition with drafts F 6.60 m, A 6.90 m and mid 6.80 m in water of density 1.012 t/m^3. Calculate the quantity of cargo she can load if she is to sail into a Tropical zone on an even keel in SW, with an expected sag of 5 cms. 50 t of fuel and fresh water is expected to be consumed in port and 25 t during the down river passage. The draft marks are 2 m aft of FP, 3m forward of AP and 2 m aft of midship.

Q.2 A box shaped cargo tank (L: 26.4m, B: 11.4m & D: 12.1m) had 6.54 m ullage (temperature 44.3^{O}C) from its ullage pipe that rises 107 cms above the top of the tank & is located 3.4m to port of the centerline & 6.3m forward of the after bulkhead. Trim 3.2m by stern, list 2.5^{O} to port. LBP is 235.6 m. She transferred 1080 cubic meters of the same oil at 26^{O}C from her storage tank into the tank. Find the ullage if she is upright but trimmed 2.0 m by head. The temperature on completion of transfer was 26^{O}C. Oil density is 0.8313 ts/cu m at 15^{O}C in vacuum. ASTM tables can be made use of.

Q.3 a. Describe the duties of dock inspector.

b. Describe the common damage / defects that may occur on watertight transverse bulkheads situated at the ends of dry cargo hold of a bulk carrier.

PART B

Q.4 a) Describe how to empty cargo tanks which are in inert condition are cleaned and made gas free on a very large crude carrier prior to proceeding to dry-docking repairs under statutory / class requirements.

b) With the help of suitable diagrams explain the working principle of educators?

Q.5 a) Write contents of SMPEP manual? Is it ship specific and who approves it?

b) Under IGC code describe how ships are classified as per the survival capability. Draw sketches to support your answer.

Q.6 Explain the following with respect to the IMDG code

1. Dangerous cargo manifest.
2. Precautions when working with dangerous goods.
3. Inspection by port authority before loading dangerous goods.

Q.7 a) Describe lashing / strapping for securing grain surface in partly filled compartment as per grain code?

b) Describe the maintenance to be carried out on hatch covers.

Q.8 a) Write short notes on:

1. Document of authorization
2. Grain loading stability booklet

b) Explain the procedures for operation of cargo hold for carriage of grain.

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

b) Describe procedures for opening closing and securing of hull opening on a RO-RO ships.

Q.10 What are the factors taken into planning and stowage of containers.

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GOVERNMENT OF INDIA

Date: - 05th Oct-2018

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. All questions in PART – A are compulsory, Attempt any five questions from PART – B.
2. All questions carry equal marks i.e. 25 Marks each.

PART -A

Q.1 M. V. 'Hindship' arrived port with the following drafts F 8.65 m, A 8.89 m, Mid 8.81 m. Density of dockwater 1.016 weights on board: H.O. 350 t, D.O. 135 t, FW 162 t, L.O. 22t, and unpumpable ballast 54 t. If the constant and stores as determined on completion of discharge was 160 t. Calculate the quantity of cargo discharged. Draft marks are located 2m aft of FP, 4m ford of AP and 1m ford of midship.

Q.2 A box shaped tank L 30 m x B 18m x 20 m containing crude oil of density at $15^{O}C$ = 0.8275 t/m^3 had an ullage of 1.80 m as measured by a sonic Tape. The ullage port was located 3 m fwd of the aft bulkhead. 1 m above the tank top and 2 m to port of centerline of tank. Trim observed was 3 m and the vessel listed 1^{O} to starboard. Observed temp $32.5^{O}C$. Calculate the quantity of oil in tank if the LBP of vessel was 215m.

Q.3 Explain how weather-tightness is maintained in the Hatch covers and what precautions will you take for securing the hatch covers before proceeding to sea?

PART B

Q.4 Write short notes on:
i) Stowage Category
ii) Compatibility group code
iii) Dangerous cargo Manifest.
iv) EmS.

Q.5 a) Why is the Heel maintained on LPG, explain in detail? What are coolants and the use these coolants on LPG? What do you understand by the term hot gassing – up?
b) State the contents of Procedure and Arrangements (P & A) manual as required under Annex II of Marpol 73/78.

Q.6 With reference to IMDG CODE explain segregation criteria for carriage of dangerous goods. Justify your answers with proper sketches.

Q.7 What are the hazards and procedures for loading coal in a Bulk carrier?

Q.8 As per IMO Grain code, describe briefly with sketches various methods of reducing grain heeling moments on a ship loaded with grain.

Q.9 a) Prepare a Planned Maintenance System for hatch-covers.
b) What are the lashing requirements for Timber deck cargo as per "code of Safe Practice for Timber Deck Cargo"?

Q.10 What all factors required to be considered into planning and stowage of containers?

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GOVERNMENT OF INDIA

Date: - 11th July-2018 of 2nd Seating Noida & Chennai

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. All questions in PART – A are compulsory, Attempt any five questions from PART – B.
2. All questions carry equal marks i.e. 25 Marks each.

PART -A

Q.1 M. V. Hindship arrived Paradip roads (RD 1.025), loaded with grain in bulk with the following drafts – For'd (P) 8.69m, For'd (S) 8.73, Aft (P) 9.95m, Aft (S) 10.11m, Mid-ship (P) 9.26m and Mid-ship (S) 9.53m.
Five days later she is to be berthed in port with an even keel draft of 6.83m.
Calculate the minimum quantity of cargo to lighten at anchorage if the dock water RD is 1.023. She is expected to consume 3.5t of DO and 22t of FW daily while at anchorage. Her FP is 3.5m forward of the for'd draft marks, her after draft marks are painted 5.8m for for'd of the AP and the mid-ship marks are located 2.2m for'd of LBP/2.

Q.2 A box shaped cargo tank 40m x 22m x 18m was observed to have a sounding of 15cm by sounding rod. Ullage reference point was located at the tank top, 3m forward of aft bulkhead. Vessel was trimmed 1m by stern and LBP of vessel was 255m. Upon completion of loading in the tank, vessel was even keel and ullage of tank by sonic gauge was 1.10m. Calculate the Quantity of oil loaded in the tank, if the observed temperature was 30^{O}C and API gravity was 30.5 in both cases.

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

PART B

Q.4 a) What is a PV breaker? How will you ensure that it is protecting the cargo tanks effectively?
b) You are the C/off of Crude oil tanker. Explain in proper sequence the procedures to be followed for unloading of cargo and COW in an oil tanker.

Q.5 a) What are the features of "certificate of fitness" on a Gas/chemical carrier? What is the use of P & A manual on a chemical tanker?
b) Explain in proper sequence the procedures of preparation and then loading operations of full cargo of LNG.

Q.6 What information is required to be provided by shipper when loading packaged dangerous cargoes? What measures will you take to ensure a safe stowage and carriage of explosives?

Q.7 a) Briefly state the classification of solid bulk cargoes as prescribed in the IMSBC code.
b) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan loading on board bulk carrier.
c) State documents as a Mate you would sign after loading of this cargo.

Q.8 With reference to 'Code of Safe Practice for Carriage of Grain'
a) Define: i. filled compartment ii. Angle suitable compartment
b) Describe briefly various methods of reducing grain heeling on a ship loaded cargo of grain in bulk.

Q.9 a) Describe the general principles & practices fo be followed in the stowage & securing non-standardized cargoes as given in the code of safe practice for cargo stowage & securing.
b) With sketch of a bay plan on container ships, describe information's reflected in the plan.
c) Briefly state the requirements of construction of standard containers.

Q.10 a) Describe the design, construction and stability requirements of Timber ship.
b) Describe the under deck stowage of logs and its securing arrangements.
c) Significance of voyage planning and ship handling on container ships.

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GOVERNMENT OF INDIA

Date: - 4th July-2018

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

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

Q.1 M. V. Hindship arrives in port in SW R.D. 1.018 drawing drafts Fwd = 6.60m, Mid (p) = 7.70m, Mid(S) = 7.62m. She loaded 280t of rubber bales and some bulk grain. If during the port stay she had consumed 8.6 tonnes of F.O. and 46 tonnes of F.W. and her departure drafts were F = 8.2m, Mid (S) = 8.1m, Mid (P) = 8.1m in water of R.D. = 1.025. How much bulk grain was loaded by her at this port?

Q.2 A tanker of length 210m at a trim of 3.6m has a centerline tank of width 24m, length 38m and a height equal to 16m. An ullage port located at 3m to port of centerline, 4m forward of aft bulkhead and 1m above the deck of radar beam gauge type, measures ullage of 1.95m. At this moment the list was 1.5^{O} to starboard. If the density in vacuum at 15^{O}C was 0.846, and loading temp was 26^{O}C, calculate the quantity of oil.

Q.3 a. Enumerate responsibility of chief officer with respect to signing of mate receipt and issuance of letter of protest to shippers and cargo receivers.
b. Describe the procedures to check weather tightness of hatch covers and action to take in case of deformity in hatch cover.

Q.4 a) Describe the precautions to be taken on an oil tanker during loading discharging and tank cleaning against static electricity?
b) Explain the use and limitations of oxygen analyser, Explosive meter, and Tank Scope and Dragger Tubes?

Q.5 a) Give reasons why vapor of LNG (methane) only is used as ships fuel. Also explain why methane can be liquefied only by chilling but not by any amount of pressure.
b) Describe briefly integral tank, gravity tank & pressure tank as per IBC code.

Q.6 Explain the following terms with reference to IMDG code:-

a) Limited Quantities b) Excepted Quantities c) Compatibility Group

Q.7 a) Briefly describes three major hazards appropriate to the solid bulk cargoes.
b) What precautions should be observed in order to minimize the risk of fire in coal cargoes? State the requirement with regard to ventilation of coal cargo for a long voyage.

Q.8 a. Describe the stability criteria for ships carrying grain in bulk having Document of Authorization.
b. Describe rolling period for ships carrying timber deck cargoes with its limitations.

Q.9 a) State salient features for car carriers and RO-RO ships with regard to cargo handling and securing equipments.
b) State the cargo related documents carried on board car carrier and RO-RO ships.

Q.10 a) Describe the securing arrangements of rolled steel, steel coils and containers on a general cargo ships.
b) Describe precautions required to be taken while loading a heavy lift using the ship's gear.

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GOVERNMENT OF INDIA

Date: - 4th April-2018

FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 Hours **PASS MARKS: 120** **MAX. MARKS: 200**

Notes:

1. **Questions 1, 2 and 3 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 A vessel is loaded with grain in bulk of S.F. 1.80 m^3/T. Her displacement in final condition is 68000 t, KM of 11.40 m and FSM is 4400 tm. Two the holds are partly filled and the VHM of the holds put together is 3000. All other holds are full and the total VHM of the filled compartments is 18800 m^4. KG of the holds was used to determine the KG of the ship and is known to be 10.48 m.

The KN values of the ship in this condition are:-

HEEL	12^O	15^O	30^O	40^O	45^O	60^O
KN	2.78	3.51	7.033	9.36	10.21	11.28

Determine if she complies with Intact Stability Criteria for vessels laden with Grain in bulk.

Q.2 A vessel with a trim of 3.3 mtrs by stern arrived at load port with 8 cms of water in the cargo tank. Dimensions of the tank are 35 m x 28 m x 20 m and LBP of the vessel is 160 m. Location of ullage port is 0.8m above deck and 4 mtrs from aft bulkhead. The tank was loaded with oil cargo and ullage taken by radar gaurge upon completion of loading was 3:27 m at temperature of 27 deg C. the vessel had a trim of 1.8 m by stern after completion of loading. Location of Radar gauge is 0.5 mtrs above deck and 5 m from aft bulkhead. Density of cargo at 15 deg C is 0.8450 t/cbm. Calculate the quantity of cargo loaded in this tank.

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.

(b) Describe about the register for ships lifting appliances 1990.

PART - B

Q.4 Define / describe following:-

a. Dirty Ballast **b**. Cloud Point **c**. Cargo Eductor

d. Reid vapour pressure **e**. TLV-TWA.

Q.5 Write short notes on following:-

a. Bill of lading. b. Responsible person

c. Tallying of cargo d. Criteria of discarding wire rope.

Q.6 a. Write in brief how a tank of a fully refrigerated gas tanker will be prepared for loading assuming a ship out of yard.

b. Make a table showing control of discharge of category X, Y & Z NLS as per Marpol annex II.

Q.7 a. Describe the stability criteria for ships, carrying grain in bulk without having Document of authorization.

b. Define “Separated from” and “Separated by a complete compartment of hold from” as per IMDG Code.

Q.8 a. With the help of neat sketches describe securing arrangements of steel coils.
b. With the help of a neat block diagram explain the refrigeration system (Brine Cooling) on reefer ships.

Q.9 a. Explain the precautions to be taken when handling dangerous cargoes.
b. Describe the vulnerable areas on ships requiring particular attention against infestation.

Q.10 Describe the general principles and practice to be followed in the stowage & securing non standardized cargoes as given in the code of safe practice for cargo stowage ad securing.

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56B

GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: FUNCTION: CARGO HANDLING AND STOWAGE
(Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX MARKS: 200**

Notes:
1. **Questions 1, 2 and 3 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 in a loaded condition with drafts F 9.20m, A 9.30m, Midship 9.30m in water density 1.005 t/m3.
Calculate quantity of cargo discharged if the ship is to sail out with draft of 6.50m, with an expected hog of 12 cm. The draft marks are 3m aft of forward perpendicular, 1.5m abaft midships & 5m aft of after perpendicular

Q.2 Find the final ullage using a UTI gauge, when 3,200 mt of Gas oil (density 0.8860 ts/m3 in vacuum) is blended with 2,300 cubic meters of Diesel oil at 430 C (density 0.8693 ts/m3 in vacuum) in a box shaped tank 28.5m x 18m x 15m (L x B x D) on board a ship of LBP 196.4m, trimmed 1.2 m by head and listed 30 to port.
Ullage port for this tank is located 5.8 m forward of the after bulkhead, 4.7 m to stbd of the centerline and 112 cms aboye the top of the tank. Final temperature on completion of belnding was found to be 200C

Q.3 (a)Describes the common damage/defects that may occur on watertight transverse bulkheads situated at the ends of dry cargo holds of a bulk carrier
(b) Define authorised person, responsible person, and loose gears as per Dock workers Safety, Health and Welfare Regulations 1990

PART – B

Q.4 Explain with neat sketch working principle of any type of oxygen analyser & explosimeter

Q.5 (a)Explain briefly any five hazards of chemical cargoes & what control measures are taken on chemical tanker to reduce risks from these hazards
(b) Describe with a diagram about a LNG ships membrane tank structure

Q.6 As per IMDG Code, describe following:
i) Ems ii) MFAG iii) Segregation of dangerous goods iv) Dangerous goods Manifest
v) Various types of magazines for carriage of explosives

Q.7 What precautions are recommended when loading concentrates as per IMSBC code

Q.8 (a) Describe the procedures to check weather tightness of hatch covers with their advantages and disadvantages
(b) Describe the precautions to be taken if cargo has to be carried under Fumigation

Q.9 (a)State the lashing requirements for Timer deck cargo as per Code of Safe Practice for Ships Carrying Timber Deck Cargo
(b) With the help of neat sketch describe general outline of refrigeration system (Brine Cooling) on Reefer ships

Q.10 (a) Describe the hazards associated with coal cargoes and precautions to be taken while carrying it
(b) Explain the purpose and objectives of IMSBC code

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GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

Code 64B

TIME: 3 HOURS | PASS MARKS: 120 | MAX MARKS: 200

Notes:
1. All questions in PART - A are compulsory. Attempt any five questions from PART - B
2. All questions carry equal marks i.e 25 marks each

PART – A

Q.1 M.V. Hindship arrived Vizag port with drafts F: 7.23m, Mid: 8.33m & A: 9.23m in RD of 1.010. After discharging partly she sailed drawing 6.20m on even keel with 8cms sag in water of RD 1.020. Calculate how much cargo she discharged if she had replenished in this port DO/110mt & FW/240mt & consumed 12mt of DO and 65mt of FW during her port stay

Q.2 On completion of cargo, at the time of sounding the tanks, dip was observed to be the tanks were 36m x 27m 18m. LBP of the vessel was 270m. Calculate the on board quantity (OBQ), given that sounding pipe was located 5m from the aft bulkhead and 0.9m above deck.

Q.3 a) Explain the importance of assessing defects and damage to cargo spaces after each cargo operation. Briefly describe the procedures for same
b) Enumerate various test procedure available for checking weather tightness of hatch covers and discuss their effectiveness

PART B

Q.4 a) Explain the functions and maintenance of cargo related equipments on oil tankers using sketches and diagram:
i) Pressure Vaccum (PV) Valve ii) Crude oil Washing (COW) Machine
b) A VLCC is discharging crude oil at berth, and is to proceed for dry – docking on completion of this discharge. Describe the procedure for crude oil washing of tanks in port on this tanker during the present discharging operations

Q.5 a) Describe the loading procedure of semi-refrigerated LPG tanker in accordance with ICG Code and ISM Code?
b) State the cargo related documents required on board Chemical Tankers.

Q.6 Write short notes on the following terms under IMDG code:
a) Medical First Aid Guide (MFAG) b) Subsidiary Risk Label
c) Types of packing group d) Segregation, and
e) Classification of IMDG cargo.

Q.7 Explain the properties of Direct reduced Iron? What are the precautions to be taken prior loading, during loading and also during the passage?

Q.8 Write short notes on followings with respect to grain code:
a) Bundling & Saucering b) Lashing and strapping c) Strength of grain fittings

Q.9 a) Describe the procedures for loading and carriage of refrigerated containers
b) Briefly explain the need to monitor atmosphere in Ro-Ro spaces

Q.10 a) Explain stowage and securing of deck timber cargo
b) Describe general outline of refrigeration systems onboard Reefer ships

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5/7/17

GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

Code 430

TIME: 3 HOURS **PASS MARKS: 120** **MAX MARKS: 200**

Notes:
1. All questions in PART - A are compulsory, Attempt any five questions from PART - B
2. All questions carry equal marks i.e 25 marks each.

PART – A

Q.1 M.V. Hindship arrived port in partly loaded condition with the following drafts: Fwd: 6.00m, Aft: 7.00m and mid-ship: 6.55m. What maximum cargo quantity will you order to load if she has to sail on 9.00 mtrs even keel from this port but is expected to be hogged by 5 cms on completion of loading? Draft marks are located 2m fwd of fwd perpendicular, 1m fwd of aft perpendicular and 1m abaft mid-ship

Q.2 A box shaped cargo oil tank 30m x 20m x 15m is loaded with crude oil. On completion, ullage found by UTI tape was 2.10m at 35°C, water cut 20 cm. Calculate the weight of cargo in air if density at 15°C in vacuum is 0.8800 kg/ltr, LBP 210m, trim 2.0 mtrs by stern, ullage port located 3m fwd of aft bulkhead (Assume the reference point for ullage is main deck)

Q.3 Briefly explain the following:
a) Periodic testing of lifting appliances and loose gears
b) Methods of securing hatch pontoons
c) Inspection of vulnerable areas in the dry cargo holds for damages

PART B

Q.4 a) Describe the checks to be carried out prior, during and after Cow operations
b) Describe with sketch: High Velocity (HV) vent valve fitted in cargo oil tanks

Q.5 a) What are the types of gas carries considering survival capability as per IGC Code
b) Describe the hazards involve with the cleaning in Type 1 chemical tankers

Q.6 a) As per IMDG code, name the stowage categories and explain segregation criteria for packaged cargoes for all classes
b) List the explosives, which may be carried on passenger ships

Q.7 a) Enumerate hazards associated with carriage of Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading
b) What are the precautions required to be taken by ship's staff during loading and handling of ballast as per BLU Code

Q.8 a) Define following, with reference to the "Code of safe practice for carriage of grain":
i) Angle of flooding ii) Specially suitable compartment
b) Demonstrate how to use the "permissible heeling moment of grain"

Q.9 a) Explain with sketch, the safe method of stowage of heavy cargo items such as locomotive and project cargo being brought by your ship during monsoon
b) In respect of Cellular Ships, briefly describe the following:
i) Anti- heeling tanks; ii) Torsional Stresses

Q.10 a) Describe the procedure for preparation of cargo space on a Reefer ship carriage of frozen butter?
b) State your action as a Mate in the event of observing damage cargo during discharging operation on board car carrier/container ships.

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GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: FUNCTION: CARGO HANDLING AND STOWAGE
(Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX MARKS: 200**

Notes:
1. **Questions 1, 2 and 3 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. Hind ship arrived with following drafts: Fwd 9.20 m, Aft 9.30 m, mid ship 9.30m, in a water of RD 1.005. Ford draft marks are 3m aft of FP, aft draft marks are 5m ford of AP & mid ship marks are 1.5 m aft of mid ship. She is to a berth where max permissible draft is 6.0 m, Calculate the amount of cargo to discharge if after discharge she is expected to hog by 10 cms

Q.2 Crude oil tanker of length between Perpendicular (LBP) 250m, has a box shaped cargo tank of dimensions L: 40m x B: 25m x D: 18m. On completion of unloading of cargo, the dip was observed as 12cm, when vessel was upright and trimmed 3m by stern. The sounding pipe was located 5m forward of the aft bulkhead and 0.9m above the deck. Calculate the quantity of cargo on board (OBQ). (Density at 15°C = 0.8275 t/m^3)

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
(b) Describe about the register for ships lifting appliances

PART – B

Q.4 (a) Sketch a general layout of an Inert Gas System of an Oil Tanker and describe its operation step by step
b) Differentiate between a P.V Valve and P.V breaker in a tanker

Q.5 (a) What are the various types of gas carriers considering survival capability as defined in IGC code?
(b) A Chemical tanker discharges phosphoric acid at a port in Sikka and is bound for Morocco for loading, Describe the operations she will perform with reference to cleaning of tanks so as to be ready on Arrival to load next cargo?

Q.6 (a) Write notes on port state control / inspections on operational requirements w.r.t Marpol Annex III
(b) List out the precautions when working with dangerous goods

Q.7 Enumerate the main hazards associated with the carriage of Coal in bulk. Also explain the precautions to be taken during its loading & carriage as per IMSBC code

Q.8 With reference to 'Code of safe practice for carriage of Grain'
What are the recommendations for safe carriage of grain with respect to intact stability, and securing of grain surfaces?

Q9 (a) Describe the planning and precautions required to be taken before loading / unloading Containers in a cellular container ship as a chief officer of the vessel.
b) What extra precautions will you exercise while loading/discharging reefer containers?

Q10 (a) Explain the precautions prior and during loading of heavy lift?
(b) With reference to SOLAS explain in detail the safe practices and procedures for loading, unloading of bulk carriers.

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GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: FUNCTION: CARGO HANDLING AND STOWAGE
(Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX MARKS: 200**

Notes:
1. **Questions 1, 2 and 3 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 at anchorage with cargo of grain in bulk with following drafts: Fwd (P) 8.69m Fwd(S) 8.73 m; Aft (P) 9.95m, Aft(S) 10.11m; M/S (P) 9.26m, M/S(S) 9.53m. She is expected to berth after five days with even keel draft of 6.75 m. Calculate minimum quantity of cargo to lighter, if she is expected to consume 3.5 t of DO and 22 t of FW daily at anchorage. Her fwd perpendicular is 3.5 m fwd of fwd draft marks, her aft draft marks are painted 5.8m fwd of aft perpendicular and M/S marks are located 2.2 fwd of mid length.

Q.2 A crude oil tanker of LBP 228m has a box shaped tank of Dimensions 32 x 20 x 20 m and trimmed 1 m by stern. Initial ullage of 0.60m is measured by Radar beam level gauge fitted 3 m ford of aft bhd on centerline of the tank. Given the density of oil at 15°C = 0.810t/m³ and observed temp is 24°C. On completion of unloading v/l trimmed 3.8 m by stern & ullage of tank was 19.88 m. Calculate the Qty of oil discharged.

Q.3 (a)With reference to Dock Workers (Safety, Health, and Welfare) act 1990 define "Authorized person" "Competent person", and "Responsible person"
(b) Describe the methods available to check the weather tightness of hatch covers and state how effective and reliable are these methods

PART – B

Q.4 (a) Explain the functions and maintenance of cargo related equipments on oil takers using sketches and diagrams i) Pressure vacuum (PV) valve ii) Crude oil washing (COW) machine
(b) Explain the use and limitations of Oxygen analyzer, Explosimeter, Tank scope and Draeger tubes on oil tankers

Q.5 Describe briefly about following w.r.t Gas tankers:
i) SIGTTO ii) Certificate of Fitness iii) Pre-arrival checklist
(b) Explain a single stage reliquefication plant found onboard fully ~~pressurised~~ LPG ship

Q.6 Write short notes on the following terms under IMDG code:
i) Medical First Aid Guide (MFAG), ii) Subsidiary risk label, iii) Types of packaging group

Q.7 Prepare a "loading plan" for loading iron ores in bulk in line with guidelines of BLU code for a typical 5 hold bulk carrier

Q.8 (a) Describe loading / unloading plan as per Code of Practice for Safe Loading and Unloading of Bulk Carrier
(b) With the help of neat sketch describe Bay Plan and what information is provided in it?

Q9 (a) Prepare a planned maintenance system for hatch covers
(b) Describe the precautions to be taken when carrying DRI in bulk

Q10 (a) Enumerate precautions taken while loading heavy lifts
(b) State the vulnerable areas in ship's cargo holds where infestation may take place

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GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE – I)
FUNCTION: FUNCTION: CARGO HANDLING AND STOWAGE
(Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX MARKS: 200**

Notes:
1. **Questions 1, 2 and 3 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 Hind Ship arrives port with drafts F 5.60 m, A 6.60 m, Midship 6.20 m in water of density 1.012t/m3. Calculate the Qty of cargo she can load if she is to sail into Tropical zone on an even keel in SW with expected sag of 5 cms. 60 T of fuel and FW is expected to be consumed in port and she is to receive 300 T of FW. The Ford draft marks are 2 m ford of FP, 2 m aft of midships and 1 m ford of AP

Q.2 Using ASTM tables, calculate the quantity of white oil in a rectangular tank of a ship of LBP 122m, trimmed 2.4m by the stern. The dimensions of the tank are 35m x 15m x 10m. The ullage port of located 1m above the deck, 3m from the tanks aft bulk head and 2m to the port of the centreline. The ullage was taken by the sonic tape and was measured as 5.8m and a water cut of 11cm was obtained. The temperature of the oil is 27 Deg C and the density of oil at 15 Deg C is 835 Kg/m3

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

PART – B

Q.4 Write notes on following w.r.t to tankers:
i) ISGOTT ii) Slop tanks iii) Tank cleaning & gas freeing iv) Segregated ballast
v) Reid vapour pressure

Q.5 (a) Write notes on following w.r.t to chemical tankers:
i) Types of chemical tankers ii) P & A Manual
(b) Write notes on following w.r.t to gas tankers:
i) Cooling down of tanks ii) ICS data sheets

Q.6 (a) Write notes on IMDG code
(b) Write notes on dangerous goods manifest

Q.7 List out the hazards and procedures for loading coal in a bulk carrier

Q.8 As per IMO Grain code describe briefly with sketches various methods of reducing grain heeling moments on a ship loaded with grain

Q9 (a) Write notes on various lashing materials for securing containers
b) What precautions will you exercise while lowering/hoisting ramps in car carriers?

Q10 (a) What precautions you will take for loading of 60T locomotive on a dry cargo ship?
(b) What preparations you will carry out prior loading refrigerated cargoes?

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part – A

Q. 1 M.V Hind Ship arrived port with drafts F 5.60 m, A 6.60 m, Midship 6.20 m in water of density 1.01 t/m3. Calculate the Qty of cargo she can load if she is to sail into Tropical zone on an even keel in SW with an expected sag of 5 cms. 60 T of fuel and FW is expected to be consumed in port and she is to receive 300 T of FW.The Ford draft marks are 2 m ford of FP, 2 m aft of midships and 1 m ford of AP

Q. 2 A crude oil tanker of LBP 228m has a box shaped tank of Dimensions 32 x 20 x 20 m and trimmed 1 m by stern. Initial ullage of 0.60m is measured by Radar beam level gauge fitted 3 m ford of aft bhd on centerline of the tank. Given the density of oil at 15°C = 0.810t/m³ and observed temp is 24°C./ On completion of unloading v/l trimmed 3.8 m by stern & ullage of tank was 19.88 m.Calculate the Qty of oil discharged.

Q.3 a. Describe the common damage/defects that may occur on watertight transverse bulkheads situated at the ends of dry cargo holds of a bulk carrier.

b. Define authorized person, responsible person, loose gear as perDock workers Safety, Health and Welfare Regulations 1990.

Part – B

Q. 4 a. Sketch flammability Diagram & how will you use it in case crude oil has leaked into cargo pump room.

b. i. What do you understand about primary & secondary means of venting on oil tanker.

ii. Differentiate between PV valve & PV Breaker.

Q.5 a) State the contents of Procedure and Arrangements (P & A) Manual as required under Annex II of Marpol 73/78.

b) Explain the operation of the re-liquefaction plant in liquefied gas tanker?

Contd.....2.....

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Q. 6 With reference to IMDG code write short notes on following
I) Shipper's declaration of dangerous goods
II) Segregation of dangerous goods
III) Dangerous goods Manifest
Iv) Emergency procedures

Q.7 Enumerate the main hazards associated with the carriage of Coal in bulk. Also explain the precautions to be taken during its loading & carriage as per IMSBC code.

Q. 8 With reference to 'Code of safe practice for carriage of Grain'
a) Define I) DOA II) stability criteria for ships with DOA &without DOA

b) What are the various methods of reducing grain heeling moments on a ship loaded with grain in bulk, describe any one of them.

Q.9 a) In respect of cellular container ships, briefly describe the following :
I) Anti heeling tanks II) Torsional Stresses III) Stack weight
b) Briefly explain the need to monitor atmosphere in Ro-Ro spaces.

Q.10 Describe various precautions you will take as a chief officer before and during loading of a boiler weighing200 tonnes. Draw a neat sketch showing securing arrangement for this cargo.

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q.1 MV Mumbai is expected to load general cargo at KOLKATA port in no 3 tween deck(bale capacity 2200 cbm) no 4 tween deck(bale capacity 2000) no 3 and no 4 lower holds(bale capacity 4200 cbm each).The discharge ports in order of rotation are first Muscat then Dubai and last Sharjah.

The booking list is as follows :

CARGO (Type)	QUANTITY m/t	STOWAGE FACTOR cum/ton	DISCHARGE PORT
Textiles bales	400	3.60	Dubai
Lead ingots	3500	0.30	Sharjah
Loose tyres	800	4.20	Muscat
Copra in bags	1600	2.60	Sharjah

Prepare a stowage plan for safe carriage of the cargo.

Q.2 Using ASTM tables calculate the quantity of white oil in a rectangular tank of a ship of LBP 120m, trimmed 2.5m by the stern. The dimensions of the tank are 35mx15mx10m. The ullage port is located 1m above the deck, 3m from the tanks aft bulkhead and 2m to the port of the centreline. The ullage was taken by the sonic tape and was measured as 5.7m and a water cut of 10cms was obtained. The temperature of the oil is 27°c and the density of oil at 15°C is 815 Kg/m^3.

Q.3 a) Explain the procedure for maintenance of hatch covers.
b) Describe methods used for testing the weather tightness of hatch covers.

Part – B

Q.4 Describe in very brief the following with respect to crude oil washing:
a) Piping system
b) Number of tanks required to be washed at discharge port.
c) Precaution against discharge of static electricity.
d) Bar diagram
e) COW Manual.

Q.5 a) What is the information required prior to loading of a given chemical cargo in bulk?
b) List the publications, which are referred to get this information?

....cont 2 ....

Q.6 What is Document of Compliance (SOLAS II-2/54.3) pertaining to dangerous goods? What information does it contain? What information can you obtain from EmS and MAFG tables?

Q. 7 a) Explain purpose and objectives of IMSBC code.
b) Explain main hazards with shipment of Sulphur in bulk.

Q.8 With respect to the carriage of grain in bulk, explain
a) Document of Authorisation b) Bundling c) Strapping

Q. 9 a) With help of a sketch explain the information provided in a Bay plan of a cellular container vessel.
b) List the pre-loading precautions for loading cars on a car carrier.

Q.10 a) Explain the preparations and precautions to be exercised before loading a large dimension cylindrical shaped heavy lift on the deck of a cargo ship.
b) Describe care, monitoring and records of frozen cargo during sea passage.

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 A box shaped tank 30mx20mx15m is to be loaded with crude oil at a temperature of 24 Deg C. Crude oil density at 15 deg C 0.8550 tonnes/m^3 in vacuum. If 4% of the volume of the tank is to be left for expansion, Calculate the quantity of oil loaded and the final ullage by **sonic tape** at the ullage port located 2mtrs fwd of the aft bulkhead 1m above tank-top and 3mtr to the port of C/L of the tank. LBP=240 mtrs, trim 3mtrs by stern, list = ½ deg (S).

Q. 2 MV Hindship arrived a Red sea port in partly loaded condition with the following drafts:

	F	A	Mid
Port	6.55	6.80	6.40
STBD	6.75	7.10	7.00

RD if the sea water=1.025. Calculate the MAXIMUM quantity of cargo that can be loaded if the vessel has to sail on an even keel from the port (Tropical Zone) but is expected to sag by 11 cms. On completion of loading, Estimated consumption of DO and freshwater etc. During port stay=40t. Forward drafts are marked 2m aft of F.P., Midship marks are 2m fwd of Midship and aft marks are 3m of aft of A.P.

Q. 3 a) The various hazards associated with the carriage of chemicals?
b) Describe various types of tank coatings in a chemical tanker. How do tank coatings mitigate one of the hazards of the chemical tanker?

Part – B

Q. 4 Explain various advantages and disadvantages of C.O.W. and how often is it carried out? On a tanker how do we carry out tank cleaning?

Q. 5 Describe different methods of carriage of liquefied gases. What is re-liquification of gas? How is it done on gas tankers?

Q. 6 With reference to IMDG CODE explain segregation criteria for carriage of dangerous goods. Justify your answers with proper sketches

Q. 7 a) Briefly state the classification of solid bulk cargoes as prescribed in the IMSBC code.
b) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading on board bulk carrier.
c) State documents as a Mate you would sign after loading of this cargo.

Q. 8 With the help of suitable sketch wrt grain code. Explain DOA, Bundling, Strapping, Saucering.

..cont ..2

9 a) What precautions will you take while loading heavy lift as a chief officer?
b) How do you ensure that the cargo does not get damaged on refrigerated ships?

10 What factors will you consider in preparing a cargo plan of a Multipurpose cargo ship?

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 M.V. Hindship arrived Karwar roads (RD 1.025), loaded with cargo of grain in bulk with the following drafts: Forward (P) 8.69m, Forward (S) 8.73, Aft (P) 9.95m, Aft (S) 10.11m, Mid-ship (P) 9,26m and Mid-ship (S) 9.53m.
Five days later the ship Is to be berthed in port with an even keel draft of , 6.75m. Calculate the minimum quantity of cargo to lighter at anchorage if the dock water RD is 1.023. She is expected to consume 3.5t of DO and 22t of FW daily while at anchorage. Her forward perpendicular (FP) Is 3.5m forward of the forward draft marks, her after draft marks are painted 5.8m forward of the after perpendicular (AP) and the mid-ship marks are located 2.2m forward of Mid length.

Q. 2 On completion of cargo, at the time of sounding the tanks, dip was observed to be 8cm. The vessel was upright and trimmed 2.5 m by stern. Dimensions of the tanks were 36m x 27m x 18m. LBP of the vessel was 270 m. calculate the on board quantity (OBQ), given that sounding pipe was located 5 m from the aft bulkhead and 0.9 m above deck.

Q. 3 How will you carry out the maintenance and inspection of the cargo gears? What is Plan maintenance system and how is it used on board?

Part – B

Q.4 a) Describe the precautions to be taken on an oil tanker during loading, discharging and tank cleaning against static electricity hazard.
b) Explain the use and limitations of Oxygen analyzer, Explosimeter, Tank scope and Draeger tubes on oil tankers.

Q. 5 a) Describe the loading procedure of a semi – refrigerated LPG tanker in accordance with the IGC Code and ISM Code?
b) State the cargo related documents required on board Chemical Tankers.

Q. 6 a) State briefly the requirements of SOLAS chapter VII and Merchant Shipping Act 1958 Section 331 on the carriage of Dangerous Goods in packaged form on Indian ships.
b) State the purpose of shipper's declaration and dangerous goods manifest and the contents therein.

Q. 7 a) Briefly explain the classification of bulk cargoes as per IMSBC code and carriage of Solid bulk cargo on General Cargo Ships under its provision.
b) Describe the test procedures for determining angle of repose and Flow Moisture Point (FMP) on board?

Q. 8 Describe the lashing material specifications and securing methods available for securing grain surfaces in filled/partly filled compartments as per Grain Code. Support your statements with proper sketches.

Q. 9 Describe the planning and precautions required to be taken before loading/unloading/shfting containers in a cellular container ship as chief officer of the vessel.

Q. 10 How will you carry out lashings of vehicles with wheels? Also explain the additional precautions that are required to be taken during loading and carriage of vehicles.

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 M.V. Hindship is floating in dock water of density = 1.020 t/ m^3. Her arrival drafts are Forward (P) = 4.05 m, Forward (S) = 4.14 m, Mid ship (P) = 4.92 m, Mid ship (S) = 5.16 m, Aft (P) = 6.22 m and Aft (S) = 6.70 m. The forward draft marks are placed 5 m aft of the Forward Perpendicular (FP), the aft draft marks are placed 8m forward of the After Perpendicular (AP) and the mid-ships draft marks are placed amidships. Her arrival condition of the ship is as follows –

Cargo = 2120.59 t, FO/DO = 580.50 t, Stores = 322.1, FW = 115 t and ballast = 900.4 t.

She spends 7 days in port for loading and in the process consumes 0.5 tons of stores per day, 0.5/2.0 tonnes of FO/DO per day and 14 tons FW per day. In addition, she received 200 tons FW and pumped out all ballast water except 50 tons of un-pumpable during her stay in port. Her sailing drafts were Forward (P) = 8.12 m, Forward (S) = 8.14 m, Aft (P) = 9.32 m, Aft (S) = 9.26 m, Mid-ship (P) 8.90 m, Mid-ship(S) = 8.84 m.

Find the amount of cargo loaded on board ship from the stated port.

Q. 2 An oil tanker of Length between Perpendicular (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, ullage as measured from a Ultra sonic tape was observed to be 1.28 m and temperature was 40°C. 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 fwd of aft bulkhead. Vessel was trimmed 3 m by stern. Terminal gave the density of oil @ 15° C as 0.8145t/m^3.

Determine the quantity of oil in the tank on board the oil tanker.

Q. 3 a) Describe the requirements and procedure to be followed for thorough examination of cargo gears and load testing of lifting appliances as prescribed in Dock Workers (Safety, health and welfare) Act 1986 and rules / regulations framed there under.

b) Describe the various factors to be considered by you as Chief Officer in preparing a loading / unloading plan as prescribed in Appendix 2 of IMSBC Code.

Part – B

Q. 4 a) State the requirements of Crude Oil Washing (COW) on oil tanker as per MARPOL 73/78 Convention.

b) List of the items of Crude oil Washing (COW) checklist.

c) List down the procedure & precautions to be observed while tank cleaning in too lean atmosphere

PAGE 2 OF 2

Q. 5 a) Explain with the help of a simple diagram, a 'closed circuit' loading operation, using a vapour return line, on Chemical tankers under the provision of IBC Code.
b) Explain the following terms: Boiling point, cargo containment systems, MARVS and inter barrier space.

Q. 6 Write short notes on the following with respect to the Carriage of IMDG Cargo-
i) Medical First Aid Guide (MFAG), ii) Emergency Schedule (EmS),
iii) Various Segregation tables, iv) DG manifest, and
v) Various types of magazines for carriage of explosives.

Q. 7 a) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading.

b) What are the precautions required to be taken by ship' staff during loading and handling of ballast as per BLU Code.

Q. 8 Describe the lashing material specifications and securing methods available for securing grain surfaces in filled/partly filled compartments as per Grain Code. Support your statements with proper sketches.

Q. 9 Describe how the stowage location for a container is defined on a cellular container vessel and what all information in provided in a bay plan.

Q. 10 a) Enumerate the precautions to be taken while handling a heavy lift.

b) How will you go about preparing the cargo hold for loading meat Carcasses?

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RYAN NORONHA

48 B

GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** 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 at the following drafts: For'd (p) 8.88m, For'd (s) 8.92 m, Midship (p) 8.96 m, Midship (S) 9.16 m, Aft (P) 9.24 m, Aft (S) 9.36m. R.D. of dock water = 1.016. During her port stay she consumed 25t of fresh water and 5t of D.O. and received 600t of H.O. She left port with draft 7m for'd, 7m aft and 7.08 m midship, with density of water changed to 1.009t/m^3 . Calculate the quantity of cargo discharged in port. (For'd draft mark are located 3m aft of FP and the aft draft marks are located 6 m for'd of AP while the midship draft marks were amidships.)

Q.2 A box shaped tank 30m x 20m x16m was observed to have a sounding of 20cm with vessel upright, by a sounding rod. Ullage reference point was located at the tank top, 50 cm above deck, 4m to port of centerline, 3m forward of aft bulkhead. Vessel was trimmed 3m by stern then, LBP of vessel was 210m. Upon completion of loading in the tank, vessel was at even keel, listed 1^0 to starboard, ullage of tank by sonic gauge was 1.35m. Calculate the quantity of oil loaded in the tank if the observed temperature was 35^0 C and density at 15^0C in vacuum 0.85 in both the cases.

Q.3 a) Define " Competent Person" "Responsible Person" and discuss the "powers of Inspector" as per ILO convention on occupational Safety and Health Convention 1979, applicable to ships.
b) Describe the procedure for inspection and maintenance of wire ropes

Part – B

Q.4 Sketch and describe Inert gas system of an oil tanker

Q.5 With reference to liquefied gas carriers, write short notes on:
a) Semi refrigerated ship b) Deep well pump c) IGC Code

Q. 6 Write short notes on -
a)Dangerous goods manifest b) Magazines c) Labels/Placards
d) Emergency procedures e) Separated longitudinally by intervening complete compartment or hold from

.....cont...2

PAGE 2 of 2

Q. 7 a) Explain what procedure you will follow for loading Urea in bulk.
b) Explain what documents are required prior loading bulk cargoes.

Q.8 Explain methods to reduce Grain heeling moments in order to meet Grain stability criteria.

Q.9 a) As a chief officer, what preparation you will take prior loading vehicles on a RO RO ship.
b) Explain advantages of Anti heeling tanks in a container ship.

Q.10 Write short notes on
a) Bill of ladings (b) Cargo securing manual (c) Refrigerated containers

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory**. Attempt any **five** questions from **Part B** 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 drafts F: 7.23m, Mid: 8.33m & A: 9.23m in RD of 1.014. After discharging partly she sailed drawing 6.20m on even keel with 8 cms sag in water of RD 1.022. Calculate how much cargo she discharged if she had replenished in this port DO/116 mt & FW/245 mt & consumed 8 mt of DO and 60 mt of FW during her port stay.

Q. 2 A box shaped cargo oil tank L 28m x B 18m x D 16m is to be loaded with Crude Oil at a temp. of 26°C. The density of oil @ 15°C = 0.8250, Given LBP = 240m TRIM 2m by stern and list ½° to stbd. If 2% of the volume of tank is left for expansion, calculate:
a) Final observed ullage by the measuring tape at the ullage port located 2m forward of aft bulkhead, 1m above the tank top & 2m port of centerline.
b) Quantity of oil loaded.

Q. 3 a) State the actions you would take as Chief Officer to avoid the detrimental effects on bulk carriers due to corrosion, fatigue and improper cargo handling?
b) Briefly state the test and certification procedure for approved Loadicator.

Part – B

Q. 4 Discuss the following with respect to crude oil washing:
a) Cargo grades not suitable for COW.
b) Checks prior, during and after crude oil washing.
c) Advantages of crude oil washing.
d) Hazards associated with COW.

Q. 5 A chemical tanker discharges Phosphoric Acid at a port in Baltic Sea and is bound for New York. Describe the operations she will perform with refer to with refer to cleaning of thanks so as to be ready on arrival to load next cargo.

Q. 6 a) What criteria, as per IMDG code, should be followed for stowing containers containing dangerous cargo 'on deck 'and 'under deck'?
b) Describe the Hazards associated with the shipment of Urea in bulk?

Q. 7 a) Describe lashing /strapping for securing grain surface in partly filled compartment as per Grain Code.
b) Describe the maintenance work to be carried out on hatch covers.

Q. 8 a) With the help of neat sketch describe the stowage position of a container in bay plan on a container ship.
b) Describes the basic principles of safe stowage and securing of cargoes.

Q. 9 What are the lashings requirements for Timber deck cargo as per "Code of Safe Practice for Timber Deck Cargoes"? Explain the causes of cargo shift.

Q. 10 a) Define the following in the context of ILO-152 (Occupational Safety, Health (Dock work) convention, 1979) (i) Competent Person (ii) Authorized Person (iii) Lifting Appliances (iv)Loose Gear
b) Describe the care and maintenance of a crane wire.

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GOVERNMENT OF INDIA

A-M

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** 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 the following drafts F.8.65, A 8.89m, Mid 8.81m. Density of dock water 1.018. Weights on board, HO 250t, FW 112t, FO 18t, and unpumpable ballast 45t. If the constant and stores as determined on completion of discharge was 150t. Calculate the quantity of cargo discharged. Draft marks are located 2m aft of FP, 4m ford of AP and 1m ford of amidships.

12395.8t fwd

Q. 2 An oil tank measures 32m X 20m X19m. On arrival port 3.22m ullage was measured by sonic tape from ullage port located 4m forward of the after bulkhead, 3m to port side of centerline and 1.82m above the top of the tank. LBP 288m, trim 3.5m by head and list 4 degree to port. Cargo temperature was 31.5° C. After the lighterage, cargo temperature was 27°C and ullage was 14.22m by tank radar which was located 4m to port of the centerline, 9m forward of the after bulkhead and 92 cm above the top of the tank. Trim 2m by stern and list 3 degree to stbd. If oil density in vacuum at 15 degree C is 0.8311 t/m^3. Find the quantity of cargo discharged.

6104.55T

Q. 3 What are the hazards associated with carriage of grain? What are the recommendations as per grain code ~~to~~ for safe carriage of grain with respect to intact stability, and securing of grain surface?

Part – B

Q. 4 Enumerate the Hazards associated with direct reduced iron (DRI) and precaution to taken while loading &carriage.

Q. 5 What are the steps to be taken as per timber code prior loading and during timber deck cargo, how is the cargo lashed?

Q. 6 Justify the statement "the planned maintenance of ship proves cost effective in the long run".

Q. 7 With respect to ~~gain~~ grain, explain the following:

a) Intact stability requirement for ship carrying grain

b) DOA

c) Grain loading stability booklet.

Q. 8 Describe the types of gas carriers with reference to nature of cargo and its protection in case of accident as categorized in the ~~IGS~~ IGC code.

Q. 9 Outline the procedures for tank cleaning a cargo tank in a chemical tanker. State the hazards involved ~~are~~ and precautions to be taken.

Q.10 Differentiate between a PV valve and PV Breaker. Draw the sketches of both.

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GOVERNMENT OF INDIA
FIRST MATE OF A FOREIGN GOING SHIP (PHASE - I)
FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **Seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

4/7/14

PART-A

Q.1 M.V. "Hindship" arrived port with drafts F 5.60 m, A 6.60 m and Mid 6.20 m in water of density 1.012 t/m^3. Calculate the quantity of cargo she can load if she is to sail into tropical zone on an even keel in salt water, with expected sag of 5 cms. 60 tonnes of fuel and fresh water is expected to be consumed in port and she is to receive 300 tonnes of fuel and 100 tonnes of fresh water in port. The draft marks are 2m forward of FP, 2m aft of midship and 1m forward of AP.

Q.2 A box shaped bunker tank (27 m x 14 m x 11 m) was loaded at 40^0 C to 96% of its capacity with fuel oil (Density at 15^0 C in vacuum = 0.8825 t/cu. m). If this fuel oil is heated to 50^0 C & then 20 % by volume of the bunkers are used, calculate the ullage shown by the tank radar fitted 5 m forward of the after bulkhead, 3 m to port of the centreline & 1.5 m above the deck if the vessel is trimmed 4.19 m by stern & listed 2^0 to stbd. LBP is 200 m.

Also calculate the quantity of oil in metric tonnes that now remains in the tank.

Q.3 a)Explain the actions to be taken to avoid the detrimental effects on bulk carriers of corrosion, fatigue and improper cargo handling.
b)With reference to Dock Workers (Safety, Health and Welfare) Regulations 1990 describe the requirement for testing and periodical examination of lifting appliances.

PART-B

Q.4 a)Draw a block diagram of IG system used on a VLCC showing various components in E/R & deck area.
b) Define following with respect to oil tankers i) Dirty ballast ii) PV Valve.iii) Spiked crude oil ?

Q.5 a) With reference to IMDG code write short notes on following:
i)MFAG
ii)Segregation of Dangerous Cargoes
b)Explain the precautions necessary before loading Dangerous goods in packaged form

Q.6 a)Explain the main hazards and precautions to be taken with the shipment of DRI in bulk form
b)Describe the recommended contents of Port and Terminal information book as per code of Practice for Safe Loading and Unloading of Bulk Carriers

Q.7 a)Describe the preparation of cargo hold for carriage of Refrigerated cargoes.
b)Describe various methods to check weather tightness of hatch covers with their advantages and disadvantages.

P.M 4/7/14

Q.8 a)Describe the stability criteria to carry bulk grain cargo on a ship with DOA and without DOA.

b)Describe the contents of Grain Loading Stability Booklet.

Q9. Your have been informed to load a mining equipment of 120 Tonnes by ship's gear. Describe the preparations to be made and precautions to be taken to load this cargo safely.

Q.10 Explain briefly:

a)How will you carry out tank cleaning or prepare a tank for reception of a wall wash cargo in a chemical tanker.

b)Draw and describe a single stage reliquification system on a gas tanker.

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11/4/14

GOVERNMENT OF INDIA

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

A.M 11/4/14

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** 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 at the following drafts F(P) 8.88 m, F(S) 8.92m, Mid (P) 8.96m, Mid (S) 9.16 m, A (P) 9.24m, A (S) 9.36m respectively. Density of DW=1.018t/m^3. During her port stay she consumed 20t of FW and 7 t of D.O. She received 600 t of H.O. She sailed from the port with drafts 6.00 m Fwd & Aft and 6.05 m mid-ship. Calculate the quantity of cargo discharged at the port, if the forward draft marks are 2 m forward of FP, after marks 3 m aft of AP and Mid marks are 1m forward of Mid-ships.

Q. 2 A crude oil tanker of LBP 232m has a box shaped tank of dimensions L 32m x B 20m x D20m trimmed 1.0m by stern containing crude oil. The initial ullage of 0.60m is measured by a radar beam level gauge fitted 3m forward of the after bulkhead on the centerline of the tank. Given that density @ 15^0 C in (vacuum) is 0.810 and observed temperature is 24.5^0 C. On completion of unloading, ullage of the cargo tank was 19.88m, vessel trimmed 3.8m by stern. Calculate the quantity of oil unloaded.

Q. 3 a) Describe the procedures and requirements for periodic thorough examination and inspection of cargo handling gears?
b) Explain the actions to be taken to avoid the detrimental effects on bulk carriers of corrosion, fatigue and improper cargo handling.

Part - B

Q. 4 a) Define the following:
i) Sour crude ii) Spiked crude iii) Pour point iv) Dirty ballast
b) Discuss the features of flammability diagram with respect of following:
i) Purging ii) Inerting iii) Gas freeing

Q. 5 a) Describe the loading procedure of a semi-refrigerated LPG tanker.
b) Sketch and describe typical tank and piping arrangement of any one type of chemical tanker.

Q. 6 Enumerate the hazards associated with IMDG cargo and precautions to be taken while loading dangerous goods in packaged form.

Q. 7 a) Enumerate the hazards associated with shipment of Coal in bulk.
b) Explain the features of Common structural rules (CSR) for bulk carriers.

Q. 8 a) Write short notes on:
i) Document of Authorization ii) Grain loading stability booklet.
b) Explain the procedures for preparation of cargo holds for carriage of grain.

Q. 9 Discuss the planning and precautions required to be taken before loading/unloading/shifting containers in a cellular container ship as Chief officer of the vessel.

Q. 10 a) With reference to 'Code of Safe Practice for ships Carrying Timber Deck Cargoes' explain the requirements for stowage and securing of timber cargoes on deck.
b) Explain the precautions to be taken during the voyage in order to protect cargoes which are liable to freeze.

GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 M. V. Hindship arrives in port in seawater of RD 1.018 drawing drafts F: 6.60m, A: 8.60m, Mid (S):7.62m and Mid (P):7.70m. She loaded 280t of rubber bales and some bulk grain. If during her port stay she had consumed 8.6 t of fuel & 46 t of FW and her departure drafts were F:8.20m, Aft: 8.20m, Mid (S): 8.10m, Mid (P): 8.10m in water of RD 1.025, how much bulk grain was loaded by her at this port?

Q. 2 A box shaped tank 30m x 18m x 20m containing crude oil of density at 15°C = 0.8275 tonnes/cubic meter had an ullage of 1.80m as measured by a sonic tape. The ullage reference point was located 3m forward of the aft bulkhead, 1m above the tank top and 2m to the port of centerline of the tank. Trim = 3m by stern, List 1° to starboard, observed temperature 32.5°C. Calculate the quantity of oil in the tank if the LBP of the vessel was 215m.

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

b) Describe the methods available to check weather tightness of hatch covers and state how effective and reliable are these methods.

hose, dt, hose alt, Ultrasonic emit, Chalk

Part - B

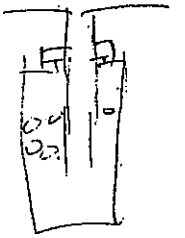
Q. 4 a) List the items of Crude Oil Washing (COW) check list.

b) Explain with a neat sketch the working of a pressure vacuum breaker.

Q. 5 A chemical tanker discharges Phosphoric acid at a port in Baltic Sea and is bound for Houston. Describe the operations she will perform with respect to cleaning of tanks so as to be ready on arrival to load next cargo.

Q. 6 Describe following:

a) Shippers declaration of dangerous goods b) competent person
c) Dangerous Cargo Manifest d) Term "Separated From"
e) Problem areas of Ro-Ro vessels



Q. 7 a) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading.

b) What are the precautions required to be taken by ship' staff during loading and handling of ballast as per BLU Code.

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Q. 8 Describe the lashing material specifications and securing methods available for securing grain surfaces in filled/partly filled compartments as per Grain Code. Support your statements with proper sketches.

Q. 9 Describe how the stowage location for a container is defined on a cellular container vessel and what all information in provided in a bay plan.

Q. 10 a) Enumerate the precautions to be taken while handling a heavy lift.

b) How will you go about preparing the cargo hold for loading meat carcasses?

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$70 \cdot 585$

$Q - 3332 \cdot 3$

GOVERNMENT OF INDIA

05TH JULY 2012

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** 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 from this port (Tropical zone) but is expected to be sagging by 4 cms on completion of loading?
Estimated port consumption of DO and FW at Aden is 84 mt. Also 100mt each of DO and FW are to be received prior to sailing.

Q. 2 An oil tank measures 32m X 20m X 19m. On arrival port 3.22m ullage was measured by sonic tape from ullage port located 4m forward of the after bulkhead, 3m to port side of centerline & 1.82 meters above the top of the tank. LBP 288m, trim 3.5m by head & list 4^0 to port. Cargo temp was 31.5^0 C. After the lighterage, cargo temp. was 27^0 C & ullage was 14.22m by tank radar which was located 4m to port of centerline, 9m forward of the after bulkhead & 92 cms above the top of the tank. Trim 2m by stern & list 3^0 to stbd. If oil density in vacuum at 15^0 C is 0.8311 t/m^3 find the quantity of cargo discharged.

Q. 3 Briefly explain the following:
a) Duties of Dock Safety Inspector
b) Periodic testing of lifting appliances and loose gears.
c) Methods of securing hatch pontoons.
d) Inspection of vulnerable areas in the dry cargo holds for damages.

Part - B

Q. 4 a) What precautions will you observe while loading crude oil having very high concentration of Hydrogen Sulphide?
b) Sketch any wet type "Deck Seal" and explain how the required water level is being maintained.

Q. 5 Differentiate the following with respect to liquefied gas tankers:
a) Independent Type A, B & C tanks
b) Integral tanks & Membrane tanks
c) Fully Refrigerated & Semi – refrigerated / Semi – pressurized gas carrier.
d) Gassing up & cooling down of cargo tanks

Q. 6 Explain the duties of carrier & shipper with respect to carriage of dangerous goods as per IMDG Code?

Q. 7 a) List all the precautions given in the IMSBC code pertaining to shifting of bulk Cargoes.
b) Explain the hazards associated with carriage of Iron Ore fines?

Contd... 2...

Q. 8 a) Describe the stability criteria for a ship carrying grain in bulk for ships without Document of Authorisation?

b) Describe "Bundling" method of securing bulk grain cargoes in filled and trimmed compartment.

Q. 9 Explain the following briefly:

i) Torsional stress ii) Stack height iii) Tare Weight

iv) Transversal lashing system v) Cellular container vessel

Q. 10 Describe various precautions you will take as Chief Mate before and during loading of a boilers weighing 200 tonnes. Draw a neat sketch showing securing arrangement for this cargo.

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 M.V. Hindship arrived Tuticorin roads (RD 1.025), loaded with grain in bulk with the following drafts – For'd (P) 8.69m, For'd (S) 8.73, Aft (P) 9.95m, Aft (S) 10.11m, Mid-ship (P) 9.26m and Mid-ship (S) 9.53m.
Five days later she is to be berthed in port with an even keel draft of 6.83m. Calculate the minimum quantity of cargo to lighten at anchorage if the dock water RD is 1.023. She is expected to consume 3.5t of DO and 22t of FW daily while at anchorage. Her FP is 3.5m forward of the for'd draft marks, her after draft marks are painted 5.8m for'd of the AP and the mid-ship marks are located 2.2m for'd of LBP/2.

Q. 2 A box shaped cargo tank 40m x 22m x 18m was observed to have a sounding of 15cm by sounding rod. Ullage reference point was located at the tank top, 3 m forward of aft bulkhead. Vessel was trimmed 1 m by stern and LBP of vessel was 255m. Upon completion of loading in the tank, vessel was even keel and ullage of tank by sonic gauge was 1.10m. Calculate the quantity of oil loaded in the tank, if the observed temperature was 30^0C and API gravity was 30.5 in both cases.

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.

Part – B

Q. 4 a) Describe the checks to be carried out prior, during and after COW.
b) Describe with sketch High Velocity (HV) vent valve fitted in cargo oil tanks.

Q. 5 a) What are the various types of gas carries considering survival capability as defined in IGC Code.
b) Describe the hazards involved with tank cleaning in Type 1 chemical tankers

Q. 6 a) As per IMDG code name the stowage categories and explain segregation criteria for packaged cargoes from class 1 to 9.
b) List explosives which may be carried on passenger ships.

Q. 7 Enumerate the main hazards associated with carriage of Concentrates in bulk as per IMSBC code. Also explain the precautions to be taken during loading of heavy density cargoes.

Q. 8 a) Explain in detail the stability criteria to be complied with for grain loading.
b) Explain any one method for securing grain surface in filled trimmed compartment as per grain code.

Q. 9 a) Write short notes on Container code (CSC).
b) With respect to stresses and corrosion, discuss the problem areas in Ro-Ro ships.

Q. 10 a) Describe the precautions required to be taken while loading a heavy lift by using ship's gear.
b) Describe with sketch the securing arrangements of heavy lift project cargo of Boiler weighing 300 tons on deck.

GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory**. Attempt any **five** questions from **Part B** 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 in partly loaded condition with the following drafts: For'd: 6.00m, Aft: 7.00m and Mid – ship: 6.55m. What maximum cargo quantity will you order to load if she has to sail on 9.00 mtrs even keel from this port but is expected to be hogged by 5 cms on completion of loading? Draft marks are located 2m fwd of fwd perpendicular, 1 m fwd of aft perpendicular and 1m abaft mid-ship.

Q. 2 A box shaped cargo oil tank 30m X 20m X 15m is loaded with crude oil. On completion, ullage found by UTI tape was 2.10 mtrs at 35° C, water cut 20cm. Calculate the weight of cargo in air if density at 15°C in vacuum is 0.8800 kg/ltr, LBP 210 mtrs, trim 2.0 mtrs by stern, ullage port located 3 m fwd of aft bulkhead. Assume the reference point for ullage is main deck.

Q. 3 Briefly explain the following:

a) Periodic testing of lifting appliances and loose gears.
b) Methods of securing hatch pontoons.
c) Inspection of vulnerable areas in the dry cargo holds for damages.

Part – B

Q. 4 a) What is a PV Breaker? How will you ensure that it is protecting the cargo tanks effectively?

b) You are the C/off of a Crude oil Tanker. Explain in proper sequence the procedures to be followed for unloading of cargo and COW in an Oil tanker.

Q. 5 a) Who issues the "Certificate of fitness" on a Gas / Chemical Carrier? What is the use of P & A Manual on a Chemical Tanker?

b) Explain in proper sequence the procedures of preparation and then loading operations of full cargo of LNG.

Q. 6 What information is required to be provided by shipper when loading packaged dangerous cargoes? What measures will you take to ensure a safe stowage and carriage of explosives?

Q. 7 Explain the properties of Direct Reduced Iron? What are the precautions to be taken prior loading, during loading and also during the passage?

Q. 8 Write short notes on followings with respect to grain code:

a) Bundling & saucering b) Lashing and strapping c) Strength of grain fittings

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

b) Briefly explain the need to monitor atmosphere in Ro-Ro spaces?

Q. 10 a) Explain stowage and securing of deck timber cargo.

b) Describe general outline of refrigeration systems onboard Reefer ships.

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GOVERNMENT OF INDIA

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

04.07.2013

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 M.V. Hindship arrived Vizag port with drafts F: 7.23m, Mid: 8.33m & A: 9.23m in RD of 1.010. After discharging partly she sailed drawing 6.20m on even keel with 8 cms sag in water of RD 1.020. Calculate how much cargo she discharged if she had replenished in this port DO/110 mt & FW/240 mt & consumed 12 mt of DO and 65 mt of FW during her port stay. 4903.44T

Q. 2 On completion of cargo, at the time of sounding the tanks, dip was observed to be 8 cm. The vessel was upright and trimmed 2.5 m by stern. Dimensions of the tanks were 36m x 27m x 18m. LBP of the vessel was 270 m. calculate the on board quantity (OBQ), given that sounding pipe was located 5 m from the aft bulkhead and 0.9 m above deck. 22. 69361

Q. 3 a) Explain the importance of assessing defects and damage to cargo spaces after each cargo operation. Briefly describe the procedure for same.
b) Enumerate various test procedures available for checking weather tightness of hatch covers and discuss their effectiveness.

Part – B

Q. 4 a) Sketch a general layout of an Inert Gas System of an Oil Tanker and describe its operation step by step.
b) Differentiate between a P.V. Valve and P.V Breaker in a tanker.

Q. 5 a) State the content of Procedure and Arrangements (P & A) Manual as required under Annex II of MARPOL 73/78.
b) Explain the operation of the re-liquefaction plant in liquefied gas tanker?

Q. 6 Explain the following with respect to IMDG code:
a) Dangerous Goods Manifest b) Subsidiary risk Label c) Segregation table
d) Stowage Category e) Compatibility

Q. 7 a) Enumerate hazard associated with carriage of Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading.
b) What are the precautions required to be taken by ship's staff during loading and handling of ballast as per BLU Code.

Q. 8 With reference to the "Code of safe practice 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.

Q. 9 a) Explain with sketch the safe method of stowage of heavy cargo items such as locomotives and project cargo being brought by your ship during monsoon.
b) In respect of Cellular Ships, briefly describe the following:
i) Anti-heeling tanks; ii) Torsional Stresses

Q. 10 a) Describe the procedure for preparation of cargo space on a Reefer ships for carriage of frozen butter?
b) State your action as a Mate in the event of observing damaged cargo during discharging operation on board car carrier / container ships.

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** 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 drafts F: 5.80 m, Mid: 6.38 m & A 6.80 m. in RD of 1.025. After loading 1250 mt of cargo she sailed on an even keel draft but with 5 cms of hog in seawater of RD 1.025. Calculate her departure drafts F, A & Midships if she sailed in an upright condition after consumption of 9.25 mt/DO, 43 mt/FW in port & also replenished 200 mt/FW & 333 mt/HO during her stay at this port.

Q. 2 Using a UTI gauge from the ullage port, a box shaped cargo oil tank 20m x 15m x 11.5m registered an oil dip of 27 cm with a water cut of 10 cms on arrival at a loading terminal. Calculate the OBQ? (Trim: 3m by stern, LBP: 171.87m and ullage port is located 6m forward of the after bulkhead)

Q. 3 a) Enumerate the responsibility of chief officer with respect to signing of Mates receipts and issuance of letter of protest to shippers and cargo receivers?

b) Describe the procedures to check the weather tightness of hatch covers and the action to be taken incase of deformity in hatch covers?

Part – B

Q. 4 What are the advantages and disadvantages of open cycle and closed cycle tank washing in a crude oil tanker?

Q. 5 A chemical tanker discharged Phosphoric acid in a port within special area. Her next port of call is outside special area. Discuss the procedures involved in tank preparation for loading next cargo.

Q. 6 With respect to IMDG Code explain the following:

a) Carriage of dangerous goods in containers
b) Limitations on carriage of explosives
c) Compatibility of class 1 cargoes.

Q. 7 What precautions are recommended when loading concentrates as per "IMSBC" code?

Q. 8 a) Explain the contents of Grain loading stability booklet?
b) Briefly explain the various methods to reduce grain heeling moments in order to meet grain stability criteria?

Q. 9 a) Explain the factors to be considered for preparing a container-loading plan.
b) Draw a neat sketch of a bay plan explaining stowage position of containers on a cellular container vessel.

Q. 10 How will you carry out lashings of vehicles with wheels? Also explain the additional precautions that are required to be taken during loading and

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10/01/2013

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 of Part A are compulsory.** Attempt any **five** questions from **Part B** 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 in a loaded condition with drafts Forward 9.20m, Aft 9.30m and Mid-ship 9.30m in water of density 1.005 t/m^3. Calculate quantity of cargo discharged if the ship is to sail out with draft of 6.50m, with an expected hog of 12cm. The draft marks are 3m aft of forward perpendicular (FP), 1.5m abaft Midships & 5m forward of after perpendicular (AP).

Q. 2 A box shaped tank on board a ship having Length: 30m, Breadth: 18m and depth: 20m containing crude oil of density at 15^0 C = 0.8275 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 centreline of the tank. Vessel's trim was 2.5m by stern and was listed to 1^0 to starboard and observed temperature of cargo to be 32^0 C.
Calculate the quantity of oil in the tank if length between the perpendicular (LBP) of the ship was 215m.

Q. 3 a) Describe with the help of diagram, the maintenance of Macgregor type steel hatch cover on board of bulk carrier.
b) Explain the critical and suspect areas including appliances and equipments which are essential for safety of ship, cargo and personnel on board to be inspected in a cargo hold after cargo discharge by grabs and pay loader in a bulk carrier.

Part – B

Q. 4 a) Describe the precautions to be taken on an oil tanker during loading, discharging and tank cleaning against static electricity hazard.
b) Explain the use and limitations of Oxygen analyzer, Explosimeter, Tank scope and Draeger tubes on oil tankers.

Q. 5 a) What are the various types of gas carriers considering survival capability as defined in IGC Code?
b) A chemical tanker discharges phosphoric acid at a port in Sikka and is bound for Morocco for loading. Describe the operations she will perform with reference to cleaning of tanks so as to be ready on arrival to load next cargo.

Q. 6 Write short notes on the following:-
a) Carriage of dangerous goods on General Cargo Ships
b) Personnel protection and safety devices on Timber ships
c) Principles of safe stowage and securing of cargoes as per Timber Code
d) BLU Code including BLU Manual

Q.7 a) Enumerate the general precautions to be observed while loading concentrates as prescribed in IMSBC code on Bulk Carriers and General Cargo Ships.
b) Explain the procedure for calculating maximum allowable weight that can be loaded in a bulk carrier for single and adjacent holds.

10/01/2013

Q. 8 a) With the help of a statical stability curve describe the stability requirements of a ship carrying grain in bulk on Bulk Carrier.
b) Describe the procedures for securing grain surface in partly filled compartments.
c) Briefly state the cargo related documents carried on bulk carrier.

Q. 9 a) Discuss the planning and preparations to be done before loading and unloading of vehicles on a car carrier.
16 b) Describe the securing arrangements of rolled steel, steel coils and containers on General Cargo Ships.

Q. 10 a) Describe the procedures for opening, closing and securing of hull openings on Ro- Ro ships.
15 b) Describe the precautions required to be taken while loading a heavy lift using ships gear.

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 in Part A are compulsory.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part - A

Q. 1 M. V. Hindship arrives in port in seawater of RD 1.018 drawing drafts F: 6.60m, A: 8.60m, Mid (S):7.62m and Mid (P):7.70m. She loaded 280t of rubber bales and some bulk grain. If during her port stay she had consumed 8.6 t of fuel & 46 t of FW and her departure drafts were F:8.20m, Aft: 8.20m, Mid (S): 8.10m, Mid (P): 8.10m in water of RD 1.025, how much bulk grain was loaded by her at this port?

Q. 2 A box shaped tank 30m x 18m x 20m containing crude oil of density at 15°C = 0.8275 tonnes/cubic meter had an ullage of 1.80m as measured by a sonic tape. The ullage reference point was located 3m forward of the aft bulkhead, 1m above the tank top and 2m to the port of centerline of the tank. Trim = 3m by stern, List 1° to starboard, observed temperature 32.5°C. Calculate the quantity of oil in the tank if the LBP of the vessel was 215m.

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

b) Describe the methods available to check weather tightness of hatch covers and state how effective and reliable are these methods.

Part - B

Q. 4 a) List the items of Crude Oil Washing (COW) check list.

b) Explain with a neat sketch the working of a pressure vacuum breaker.

Q. 5 A chemical tanker discharges Phosphoric acid at a port in Baltic Sea and is bound for Houston. Describe the operations she will perform with respect to cleaning of tanks so as to be ready on arrival to load next cargo.

Q. 6 Describe following:

a) Shippers declaration of dangerous goods
b) competent person
c) Dangerous Cargo Manifest
d) Term "Separated From"
e) Problem areas of Ro-Ro vessels

Q. 7 a) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading.

b) What are the precautions required to be taken by ship' staff during loading and handling of ballast as per BLU Code.

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Q. 8 Describe the lashing material specifications and securing methods available for securing grain surfaces in filled/partly filled compartments as per Grain Code. Support your statements with proper sketches.

Q. 9 Describe how the stowage location for a container is defined on a cellular container vessel and what all information in provided in a bay plan.

Q. 10 a) Enumerate the precautions to be taken while handling a heavy lift.

b) How will you go about preparing the cargo hold for loading meat carcasses?

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GOVERNMENT OF INDIA

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

FUNCTION: CARGO HANDLING AND STOWAGE (Management Level)

TIME: 3 HOURS **PASS MARKS: 120** **MAX.MARKS: 200**

NOTES:

1. **Question 1, 2 and 3 are compulsory in Part A.** Attempt any **five** questions from **Part B** of the remaining **seven** questions.
2. All questions carry equal marks. i.e. 25 marks each.

Part – A

Q. 1 M.V. Hindship arrived Karwar roads (RD 1.025), loaded with cargo of grain in bulk with the following drafts: Forward (P) 8.69m, Forward (S) 8.73, Aft (P) 9.95m, Aft (S) 10.11m, Mid-ship (P) 9.26m and Mid-ship (S) 9.53m.
Five days later the ship is to be berthed in port with an even keel draft of 6.75m.

Calculate the minimum quantity of cargo to lighter at anchorage if the dock water RD is 1.023. She is expected to consume 3.5t of DO and 22t of FW daily while at anchorage. Her forward perpendicular (FP) is 3.5m forward of the forward draft marks, her after draft marks are painted 5.8m forward of the after perpendicular (AP) and the mid-ship marks are located 2.2m forward of Mid length.

Q. 2 A crude oil tanker of Length Between Perpendicular (LBP) 270m, has a box shaped cargo tank of dimensions L 40m x B 27m x D 18m. On completion of unloading of cargo, the dip was observed as 12cm, when vessel was upright and trimmed 3m by stern. The sounding pipe was located 5m forward of the aft bulkhead and 0.9m above the deck.
Calculate the quantity of cargo on board (OBQ).

Q. 3 a) Describe the test procedures and the means for ensuring weather tightness of hatch covers on bulk carrier to load grain in bulk.
b) Describe the SOLAS 1974 / Loadline 1966 and Class requirements for approved Loadicator on board cargo ships.
c) Briefly state the test and certification procedure for approved Loadicator.

Part - B

Q. 4 a) Explain the functions and maintenance of cargo related equipments on oil tankers using sketches and diagrams -
i) Pressure Vaccum (PV) Valve
ii) Crude oil Washing (COW) Machine
b) A VLCC is discharging crude oil at berth, and is to proceed for dry- docking on completion of this discharge. Describe the procedure for crude oil washing of tanks in port on this tanker during the present discharging operations.

Q. 5 a) Describe the loading procedure of a semi – refrigerated LPG tanker in accordance with the IGC Code and ISM Code?
b) State the cargo related documents required on board Chemical Tankers.

Q. 6 Write short notes on the following terms under IMDG code:
a) Medical First Aid Guide (MFAG) b) Subsidiary Risk Label
c) Types of packaging group d) Segregation, and
e) Classification of IMDG Cargo.

Contd...2...

Q. 7 a) Briefly state the classification of solid bulk cargoes as prescribed in the IMSBC code.
b) Enumerate hazards associated with Direct Reduced Iron (DRI) and precautions to be taken while making stowage plan for loading on board bulk carrier.
c) State documents as a Mate you would sign after loading of this cargo.

Q. 8 With reference to 'Code of Safe Practice for Carriage of Grain'
a) Define:-
i. filled compartment
ii. Angle of flooding
iii. Specially suitable compartment
b) Describe briefly various methods of reducing grain heeling moments on a ship loaded with cargo of grain in bulk.

Q. 9 a) Describe the general principles and practice to be followed in the stowage & securing of non-standardized cargoes as given in the code of safe practice for cargo stowage and securing?
b) With a suitable sketch of bay plans on container ships, describe the information reflected in the plan.
c) Briefly state the requirements of construction of standard containers.

Q. 10 a) Describe the design, construction and stability requirements of Timber ship.
b) Describe the under deck stowage of logs and its securing arrangements.
c) Significance of voyage planning and ship handling on container ships.

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