

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – December 2024**  
**Programme Name: B Sc (Nautical Science)**  
**Semester: III**  
**Subject Code: UG21T5305**  
**Subject Name: Cargo Handling & Stowage Paper –I**

Date: 16.12.2024

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

**Section A**

All question compulsory each carries 1mark (10x1mark=10marks)  
MCQs/Fill in the Blanks – Choose the correct answer as applicable.

1. \_\_\_\_\_ is a cargo which is usually not carried on a general cargo ship
  - a) Clothes
  - b) Electronic goods
  - c) Iron Ore
  - d) Furniture
  
2. What three elements must be present for a fire to occur?
  - a) Oil, Nitrogen, Flame
  - b) Fuel, Carbon, Heat
  - c) Hydrogen, Plugs, Flame
  - d) Oxygen, Heat, Fuel
  
3. What is the primary purpose of lashing and securing cargo during transport?
  - a) To prevent theft
  - b) To prevent contamination
  - c) To ensure stability and safety
  - d) To reduce weight of cargo
  
4. What are high-density cargo?
  - a) Cargoes that have a stowage factor more than 0.56 m<sup>3</sup>/tonne
  - b) Cargoes that have a stowage factor less than 0.56 m<sup>3</sup>/tonne
  - c) Cargoes that have a stowage factor between 1m<sup>3</sup> to 2m<sup>3</sup>/tonne

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d) All of the above

5. Watch/Luff Tackle has \_\_\_\_\_ number of sheaves.

- a) 3      b) 4      c) 5      d) 6

6. SWL is calculated by dividing breaking stress with \_\_\_\_\_

- a) Breaking strength  
b) Proof Load  
c) Factor of Safety  
d) All of the above

7. If the dew point of the air inside the hold is higher than of the air outside hold \_\_\_\_\_

- a) Do not Ventilate  
b) Close the hatch  
c) Ventilate  
d) Flood the Cargo Hold

8. Which of the following factor does sweat formation depend upon?

- a) Humidity  
b) Dew point  
c) Cargo temperature  
d) All of the above

9. Tainting is another aspect of

- a) fire prevention  
b) contamination  
c) ventilation  
d) none of the above

10. Breaking strength of Manila rope can be obtained by the formula

\_\_\_\_\_

- a)  $20D^2/600$   
b)  $4D^2/300$   
c)  $40D^2/600$   
d)  $2D^2/300$

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Section B

Answer all five question (5x2marks = 10marks)

11. What is the main purpose of maintaining chain register on board ships?
12. What is broken stowage?
13. Explain the ventilation system you will use for cargo emitting gases?
14. Name various tests to check for the weather tightness of Hatch Cover?
15. What are the types of hatch covers

Section C

Answer any 5 out of 7 question ( 5 x 10 marks = 50 marks

16. (10 Marks)

A cargo hold 20m × 15m × 12m, having bale capacity of 3550 m<sup>3</sup> and load density 5t/m<sup>2</sup> is to be filled so as to maximize the freight.

The cargo available is

Steel billets SF 0.5m<sup>3</sup> /t Freight: \$ 30/ per tonne.

Cotton bales SF 2.8m<sup>3</sup> /t Freight: \$ 50/ per tonne.

How much of each cargo will you load and what is the freight earned? What will be your Advice / Suggestion to the Ship Owner?

17. ( 2x5marks =10 Marks)

a. Describe in brief entries you will make in the ship's cargo logbook?

b. Describe the care and maintenance carried out on synthetic and fibre ropes on-board your vessel?

18. (2 x 5 = 10 Marks)

a. Explain the importance of segregation and separation of different types of cargo on a ship.

b. How will you safely carry out ballasting and de-ballasting operations as a cargo officer?

19. (10 Marks)

Explain inspections that should be carried out on ship's cargo gear before handing it over to the stevedores?

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20.

(10 Marks)

Explain briefly the hazards of fire and its prevention onboard vessels.

21.

(2x5marks=10)

a. Explain the key characteristics of bulk carriers, including their design, cargo handling equipment, and types of cargo they transport.

b. What factors must be considered when developing a stowage plan for a general cargo ship?

22.

(10 Marks)

A weight of 10 tonnes is lifted by a Gyn tackle, reeved to disadvantage. Find the stress on the hauling part and the minimum size (diameter) of Wire Rope 6x24 you would order for this tackle to be used safely.

Assume Friction: 10% for each sheave

Factor of Safety: 6

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