Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – June 2024
Programme Name: Diploma in Nautical Science
Semester: II
Subject Code: UD11T5204
Subject Name: Ship Construction and Ship Stability II

Date: 05.06.2024 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

MCQs **(1 x 10 = 10 Marks)**

1. Position of COG depends on
   a) Displacement b) Deadweight
   c) Length d) Distribution of weights
2. In a container ship _____ are used to counter stresses produced by twisting moment .
   a) Hollow Girders b) Torsion Boxes
   c) Thick Steel plates d) I section beams
3. Welded horizontal joints between strakes are called as
   a) Seams b) Butts
   c) Continuous welds d) Drops
4. The main reason for a vessel to go to angle of loll is
   a) Low COG b) High COB
   c) Unstable equilibrium d) Small displacement
5. Abrupt change in the section causes _____ stress.
   a) Shear b) torsional
   c) Localized d) Hoop
6. FSC can be greatly reduced by
   a) Reducing length of the tank b) Reducing sounding of liquid in tank
   c) Reducing displacement of the ship d) Reducing breadth of the tank
7. Details of hull plating will be found in _____plan.
   a) FFA b) Shell Expansion
   c) Capacity d) GA plan
8. For ships more than 120m in length _____framing is used
   a) Transverse b) Sectional
   c) Longitudinal d) Mixed.
9. Safe working loads of Cargo lifting equipment on board can be found from
   a. Shell expansion plan b. Lifesaving appliance plan
   c. Firefighting appliances plan d. General arrangement plan
10. Fuel oil tank vents are fitted with corrosion resistant screens to prevent
   a. Flames entering through the tank vent b. escape of flammable vapors
   c. corrosion in the tank vent d. damage to the floating ball

Section B

Short Answers **(5 *2 = 10 Marks)**

11. What is "critical period "during dry-docking?
12. Define righting Lever
13. What is the purpose of loadicator or "loading instrument"
14. State the main difference between Heel & List
15. State the purpose of having air pipe and vent head in a ship's tank

Section C

16. **(2*5 = 10 Marks)**
    a) What are racking stresses? What are arrangements done to counter racking stresses?
    b) Describe what is "panting" and what is done to reduce "panting stresses"

17. "M.V.Hind ship" at a river port in water of RD 1.014 has as displacement of 10,230 t, GM (fluid) is 0.82 m FSC 0.077 m. She loads 470 t of cargo kg 9.8 m. 150 t of water ballast is run into No.1 DB tank. Find her final GM (fluid) **(10 Marks)**

18. **(6+4 = 10 Marks)**
    a) Sketch and define the following .....
       a) Garboard strake b) Bilge strake c) Sheer Strake d) Stringer Strake
    b) List out the function and purpose of double bottom tanks

19. **(2*5 = 10 Marks)**
    a) Write short note on equilibrium of ship
    b) Write 5 points of difference between Stiff & Tender vessel

20. A ship 8000 t displacement has a mean draft of 7.8 m and is to be loaded to a mean draft of 8.0 m. her GM is 0.8 m and TPC is 20. She is listed 4^0 to starboard at present. How much cargo should be loaded into the port and starboard "tween decks" (centres 5 m & 6 m off the centre line respectively) for the ship to complete loading and finish upright? **(10 Marks)**