

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations– December 2022
Programme Name: B Tech (ME)
Semester: V
Subject Code: UG11T3502
Subject Name: Ships structure & Constructions

Date: 12.12.2022

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

Choose the correct answer as applicable. (1x 10)

1. 0-40 oxygen gas cylinders is used in ship for welding/cutting, Here 40 indicates.
(i) Pressure in bar (ii) Mass in kg (iii) Volume in litre. (iv) Makers code no
2. A passenger ship is a ship that carries more than
(i) 6 passengers (ii) 9 passengers (iii) 12 passengers (iv) 15 passengers
3. Minimum no of water tight bulkheads required in cargo ship with aft engine room is:
(i) 2 nos. (ii) 3 nos. (iii) 4 nos. (iv) 5 nos.
4. Spacing between solid floors in transversely framed bottom structure is:
(i) 2.5m (ii) 3m (iii) 3.5m (iv) 4m
5. Joints between adjacent plates of same strake of shell plating is called.
(i) end joints (ii) seems (iii) butt (iv) none of them
6. Bulbous bow is fitted to
(i) improve appearance (ii) reduce pounding effect
(iii) improve bow strength (iv) improve propulsive efficiency.
7. Which of these ships are assigned minimum freeboard ?
(i) General cargo ships (ii) Bulk carriers
(iii) Oil tanker (iv) Container ships

8. In case of steering failure which of these rudders will return to centre line ?
 (i) Balanced rudder (ii) Unbalanced rudder
 (iii) Spade rudder (iv) Semi balanced rudder
9. Winter North Atlantic (WNA) load line markings are required in
 (i) All ships sailing in that area (ii) Ships less than 100m length
 (iii) Ships greater than 100m length (iv) Only special purpose ships
10. In LPG carrier, LPG is carried as liquid where it is
 (i) Fully pressurised to liquid (ii) Part refrigerated & pressurised
 (iii) Fully refrigerated (iv) Any of the above ways

Section B

Answer all questions in this part. Five Questions of 02 Marks each (2x5)

11. What are the differences between TIG welding & MIG welding?
 12. What is Panting and pounding? Which parts of the ship is mostly affected by these?
 13. Define stealer plate and Gusset plate
 14. With reference to classification of ship, explain the notation **100A1**
 15. Write brief note on Steel sandwich plate system.

Section C

Answer any 5 question (10x5)

16. (a) With suitable sketch define the following:
 (i) Length between perpendiculars (ii) Sheer (iii) Camber
 (iv) Rise of floor (v) Tumble home 5
- (b) What is DP vessel? Describe its operation. 5
17. (a) Draw & label ship's bottom structure showing solid floor with longitudinal framing. 4
 (b) Write the various defects found in welding with probable causes. 3
 (c) Why steel is subjected to heat treatment. Write brief notes on various heat treatment. 3
18. (a) What are the functions of transverse bulkheads? Make a sketch of collision bulkheads. What are the SOLAS regulations regarding it's location and penetration. 6
 (b) Name with brief description various types of hatch covers. What should be the height of hatch coamings ? 4 (3+1)

19. (a) Draw an anchor chain arrangement. Describe the location and construction of chain locker. **7**
- (b) What is a sliding water tight door?. What are the regulations for operation of water tight door. **3**
20. (a) Draw and describe the Load line markings. Where can you find the markings on ship? **5 (4+1)**
- (b) What are the objectives of assigning a free board? State different aspects taken into consideration for assigning free board. Explain the difference between type A & type B 100 ships. **5 (1+3+1)**
- 21.(a) Define with suitable sketch balanced, un-balanced & semi balanced Rudder. What are the advantages of aero foil rudder over single plate rudder. What is ment by stall angle and aspect ratio of r **7 (4+3)**
- (b) Why transom stern has prevailed over cruise stern. What is cant frame and cant beam. **3**
22. (a) Describe various periodical surveys carried out to maintain the class of a ship. **3**
- (b) What is harmonised survey? Name 3 certificates which can be covered by harmonised survey. **4**
- (c) Why block construction of ship is preferred over conventional way of constructing . **3**

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