

Indian Maritime University

(A Central University, Govt. Of India)

B. Sc Nautical Science

Semester II

June 2022 End Semester Examination

Ship Construction - UG21T5204

Time: 3 Hours

Max marks: 100 Pass marks: 35

Date: 23.06.2022

Part A – (10 x 01 mark)

Answer all questions in this section

Q.1 . Select the most appropriate answer from the given choices for each of the following questions:

(i) Beams that terminate at hatchside girders are called as:

- | | |
|---------------------|----------------|
| (a) Hatch end beams | (b) Deck beams |
| (c) Half beams | (d) girders |

(ii) What is the minimum number of transverse bulkheads required for a vessel with machinery aft.

- | | |
|-----------|----------|
| (a) three | (b) Four |
| (c) Five | (d) Six |

(iii) What is the pipe which directs the anchor cable from the windlass to the chain locker called.

- | | |
|-------------|-------------------|
| (a) Mooring | (b) Hawse pipe |
| (c) Scupper | (d) Spurling pipe |

(iv) What is distortion of a vessel's structure caused by rolling called?

- | | |
|--------------|--------------|
| (a) Racking | (b) Slamming |
| (c) Pounding | (d) Heaving |

(v) What is the connecting plate between a side frame and a transverse deck beam called?

- | | |
|------------|---------------|
| (a) Girder | (b) Gusset |
| (c) Knee | (d) Stiffener |

(vi) In ideal conditions, the forward distance a propeller will move in one revolution of the shaft is the

- | | |
|--------------|----------|
| (a) Diameter | (b) Slip |
|--------------|----------|

(c) Pitch

(d) Aspect ratio

(vii) On a single screw vessel the stern frame:

- (a) furnishes support to the rudder, propeller shaft
- (b) provides foundations for aft mooring winches
- (c) provides foundation for the main propulsion engines
- (d) transfers the driving force of the propeller to the hull

(viii) Bilge keels are fitted on ships to _____

- (a) Assist in dry dock alignment
- (b) improve the vessel's stability
- (c) protect the vessel from slamming against piers
- (d) reduce the rolling of the vessel

(ix) The "inner bottom" is the _____

- (a) tank top
- (b) inner side of the vessel's shell
- (c) space between two transverse frames
- (d) compartment between the tanktop and bottom shell

(x) Which type of weld testing can be used to detect internal flaws?

- (a) Radiographic
- (b) Magnetic particle
- (c) Dye penetrant
- (d) Visual inspection

Part B – (05 x 02 marks)

Answer all questions in this section

Q.2

- a). What is a wash plate and Why is it used in a tank?
- b). Differentiate between air pipe and ventilator.
- c). What is an A- bracket? Are they used on single screw ships?
- d). Why are non-return valves used in bilge piping system?
- e). State two advantages of welding over riveting in a ship.

Part C – (05 x 10 marks)

Answer any 5 questions in this section

Q.3. (a) What are tank side brackets? Sketch a tank side bracket showing connections with adjacent structures. **(5 marks)**

(b) What are the different types of floors used in a DB tank? Name the different types of openings in floors and their uses. **(5 marks)**

Q.4. (a) Sketch and explain the construction of a plain watertight bulkhead. **(7 marks)**

(b) Sketch and label a bulkhead stool used in a bulk carrier **(3 marks)**

Q.5. (a) Explain with sketches suitable strengthening arrangements for cargo hatch openings. **(5 marks)**

(b) Describe any 5 problems associated with RORO ships. **(5 marks)**

Q.6. With the help of suitable sketches explain bilge piping system of a ship. **(10 marks)**

Q.7.(a) Sketch and mention one benefit of each: (i) Rake (ii) Skew **(5 marks)**

(b) Mention five functions of the stern frame. **(5 marks)**

Q.8.(a) Explain a controllable pitch propeller. State two advantages and two disadvantages of it. **(5 marks)**

(b) Sketch and label the anchoring arrangement on the forecastle Deck? **(5 marks)**

Q.9. Explain Non-destructive testing of welds. **(10 marks)**