

***B.Tech. Degree IV Semester Examination in  
Marine Engineering June 2013***

**MRE 407 SHIP TECHNOLOGY**

Time : 3 Hours

Maximum Marks : 100

(5 x 20 = 100)

- I. (a) List the advantages and disadvantages of the following ship building materials:  
(i) Mild steel (ii) High tensile steel (iii) Aluminium  
(iv) Fibre reinforced plastic (FRP).  
(b) Distinguish between hogging and sagging stresses in longitudinal bending of the ship. Draw an approximate shear force and bending moment distribution of the ship and locate the points along the length of the ship where shear force and bending moment are maximum.

**OR**

- II. (a) Define the following parameters using appropriate sketches: length O.A., Length B.P. Breadth moulded, Depth moulded, Draft moulded.  
(b) Describe a method each for welding (i) mild steel (ii) aluminium.

- III. (a) Describe with sketches (i) a solid floor (ii) a bracket floor.  
(b) Draw a typical Midship section of a double hull tanker and mark the major strakes, transverse stiffeners and longitudinal stiffeners.

**OR**

- IV. (a) Sketch a transverse subdivision bulkhead of a longitudinally framed container ship, showing various strakes, stiffeners and details of penetration of longitudinals.  
(b) Sketch the transverse view and horizontal section of a transverse corrugated bulkhead. What are the advantages of a corrugated bulkhead?

- V. (a) Sketch the forepeak of a typical ocean going ship, showing the collision bulkhead, chain locker, cast stem, plated stem above load water line, forecastle, panting stringers.  
(b) Describe with a sketch the anchoring arrangement of an ocean going ship showing the anchor, chain, hawse pipe, windlass, chain stopper, devil's claw, chain pipe and chain locker.

**OR**

- VI. Describe with sketches the following types of rudders.  
(i) spade rudder (ii) rudder with bottom support  
(iii) horn rudder (iv) rudder with tail flap.

- VII. (a) Define freeboard. Why is a minimum freeboard necessary in a ship?  
(b) List the steps involved in calculation of minimum freeboard for a Type A ship including all the corrections.

**OR**

- VIII. (a) Define Gross tonnage and Net tonnage. How are they calculated according to the IMO 1969 convention on tonnage measurement?  
(b) Sketch the Plimsoll mark and load line mark specifying their locations on the hull of a ship.

- IX. Answer *any two* questions.

- (a) Sketch the typical layout of a shipyard and explain the function of each section.  
(b) Describe with sketches the process of end launching of a ship from a slipway.  
(c) Describe how a speed trial is conducted on a ship. What are the methods/corrections to account for wind and current?