BT- MRE –VI – 06.13 – 0630

B.Tech. Degree VI Semester Examination in Marine Engineering June 2013

MRE 607 NAVAL ARCHITECTURE II

Time : 3 Hours Maximum Marks : 100

I. (a) How do you determine B.M.distribution along the length of a ship? (5)

(b) A rectangular shaped ship of size 120m long, 20m wide and 12m deep is floating in water with the following weights: (15)

(i) 12,000t evenly distributed over the entire length.

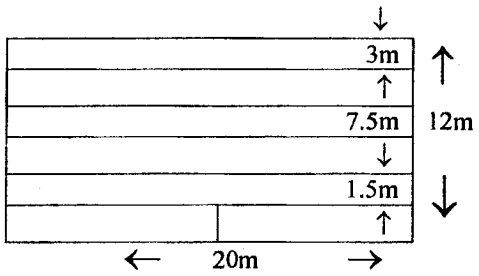
(ii) Another load of 3000t is distributed amidships evenly for a length of 40m.

Determine the load curve, weight curve, buoyancy curve, shear force curve and B.M.curve.

OR

II. (a) What are the static and dynamic loads acting on a ship structure? (5)

(b) The midship section of a ship of breadth 18m and depth 12m is shown. (15)



All plates and girders are of 12mm thick.
Find out minimum section modulus.

III. (a) Define real and apparent slip ratios. (5)

(b) A propeller has a real slip ratio of 0.08 and wake fraction of 22%. Calculate its apparent slip ratio (15)

OR

IV. (a) Explain the various efficiencies associated with ship propulsion. Differentiate between quasi-propulsive coefficient and propulsive coefficient. (5)

(b) A propeller has diameter of 8m and pitch ratio of 0.68. Hub radius is 0.2R. Calculate the pitch angle at root and tip of blade. (15)

V. (a) Sketch a typical rudder and define span, chord, aspect ratio, taper ratio, leading edge, trailing edge root and tip. (10)

(b) Explain the various kinds of motion stabilities associated with ships. Make neat sketches. (10)

OR

VI. (a) Explain the turning action of ship and role of rudders. (10)

(b) What are the parameters affecting the rudder forces? How do you calculate rudder torque? (10)

(P.T.O)

VII. (a) What are the different types of waves in the sea? Briefly explain. (10)

(b) How trochoidal waves are generated? Derive the equation for the co-ordinates of a trochoidal wave. (10)

OR

VIII. (a) Derive the equation of motion of ship in unresisted rolling in still water. Write down the expression of free rolling period and explain the terms. (10)

(b) A ship of 10,000t displacement is having GM = 0.5m and radius of gyration = 7m. Calculate the rolling period. (10)

IX. Write short notes on ***any four***. (20)

(i) Anti-rolling devices

(ii) Strength, duration, fetch, sea and swell

(iii) Admirality coefficient and fuel coefficient and its uses

(iv) Wettness and slamming

(v) Cavitation of propellers

(vi) Sagging and hogging

(vii) Balancing of rudders.

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