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10MR62

Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Naval Architecture - II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Draw and explain the Geometry of screw propeller and explain what is Right hand propeller and Left hand propeller. **(10 Marks)**

b. A propeller has a piten ratio of 0.95. When turning at 120 rev/min the real slip is 30%, the woke fraction is 0.28 and the ship speed 16 knots : the thrust is found to be 400kN, the torque 270 kN – m and the QPC 0.67. Calculate i) the propeller diameter ii) the shaft power iii) the propeller efficiency iv) the thrust deduction factor. **(10 Marks)**

2 a. Explain Blade Element theory of Propeller. **(14 Marks)**

b. Explain Open Water Experiment and various similarities should consider before doing open water measurement. **(06 Marks)**

3 a. A ship 150m long and 8.5m draught has a rudder whose area is $1/60^{th}$ of the middle – line plane and diameter of stock 320mm. Calculate the maximum speed at which the vessel may travel if the maximum allowable stress is $70MN/m^2$ the centre of stock 0.9m from the centre of effort and the maximum ruder angle is 35^0. **(10 Marks)**

b. Explain Angle of heel when turning. **(10 Marks)**

4 a. Explain with the neat sketch, why the rudder is fitted in the aft and not in the bow of a ship. **(10 Marks)**

b. Mention various types of rudder and other maneuvering devices used on ship. **(10 Marks)**

PART – B

5 a. Write a short note on Still Water bending moment with a diagram. **(10 Marks)**

b. Discuss how the ship structure may fail in service. **(10 Marks)**

6 a. A box barge 45m long and 15m wide floats at a level feel draught of 2m in sea water, the load being uniformly distributed over the full length. Two masses each of 30 tonne are added at 10m from each end and 50 tonne is evenly distributed between them. Sketch the shear force diagram and give the maximum shear force. **(12 Marks)**

b. Discuss Super structures and their contribution to longitudinal strength. **(08 Marks)**

7 a. Discuss the two standard waves used in ship design. **(08 Marks)**

b. For regular Trochidal wave deduces an expression how radius of the point tracing out sub – surface trochidal decreases exponentially with increasing depth. **(12 Marks)**

8 a. Explain three basic systems of roll – damping using free surface tanks. **(10 Marks)**

b. Explain forces due to i) Rolling ii) Pitching iii) Heaving iv) Yawing. **(10 Marks)**

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