

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)
End Semester Examination Dec 2019/Jan 2020
B.Sc. (Nautical Science)
Semester -V
UG21T3502- NAVAL ARCHITECTURE PAPER - I

Date: 11.12.2019

Max Marks: 70

Time: 3 Hours

Pass Marks: 35

Note: Question No.1 is compulsory.

Answer any 6 question from remaining 8 questions (each of 10 marks).

Non programmable Scientific Calculator is permitted.

Q.1 Define / State the following: (5x2=10 Marks)

- (a) Centre of Pressure
- (b) Racking Stresses
- (c) Shearing Force
- (d) Critical period during drydocking.
- (e) Panting Stress.

Q.2 (a) Half Breadths of a transverse water tight Bulkhead from top are 5.2m, 4.8m, 4.3m, 3.7m and 3.0m. Bulkhead is 8m high and tank contains oil of density 0.85. Sounding of the tank is 12m. Find the Thrust on the bulkhead. (6 Marks)

(b) In the above case what will be the position of "Centre of Pressure" with respect to liquid level. (4 Marks)

Q.3 (a) Transverse Bulkhead of the Deep Tank on a Ship is 12m high and 6m Broad. The Deep Tank is filled with Dock water (RD=1.015), to a sounding of 8m. Calculate the Thrust on the bulkhead. (6 Marks)

(b) Calculate the position of "Centre of Pressure" in the above case, with respect to top of the bulkhead. (4 Marks)

Q.4 (a) A box Shaped vessel is 100mx20m, floating at an even keel draft of 5m, has a midship compartment 10m long and extending side to side. Calculate the Mean Draft, after the Midship compartment is bilged. (6 Marks)

(b) In the above question, if the KG of the vessel is 5.3m, find the GM in bilged condition. (4 Marks)

- Q.5 (a) Discuss "Stability" aspect of a vessel, during Drydocking. (4 Marks)
- (b) A vessel of Displacement 19,200t, Length 140m, KM 6.5m, KG 6.0m, COF 2.0m forward of midship and MCTC 120, is to be drydocked. Calculate the maximum permissible trim by the astern, so that she will have a minimum GM of 0.3m on taking blocks F&A. (6 Marks)
- Q.6 (a) Write short notes on "Pounding" of a vessel. (4 Marks)
- (b) A light beam AB 6m long is supported at its ends and carries a load of 12kgs at 2m from end A. Draw the SF and BM curve for the beam. (6 Marks)
- Q.7 (a) Discuss in brief, the purpose of "Inclining Test" on Ship. (5 Marks)
- (b) Discuss in brief, the precautions required to be taken during "Inclining Test" of a vessel. (5 Marks)
- Q.8 Assuming other parameters of a vessel such as Length, Draft & KG remaining unchanged, discuss the following:
- (a) Effect of Increasing Beam on Ship Stability. (5 Marks)
- (b) Effect of Increasing Freeboard on Ship Stability. (5 Marks)
- Q.9 (a) Discuss initial parameters required to be fed in a loadicator, prior to it is put into action. (6 Marks)
- (b) How does a Loadicator improve efficiency of Duty Officer during a Cargo watch. (4 Marks)

====X=====