Exam No: _____

Date: 18/11/2016.

GANPAT UNIVERSITY

B. TECH SEM- V (MARINE) REGULAR EXAMINATION– NOV-DEC 2016

2MR503 Naval Architecture I

TIME: 3 HRS

TOTAL MARKS: 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.

(2) Figures on right indicate marks.

(3) Be precise and to the point in answering the descriptive questions.

SECTION: I

Q.1 A box shaped vessel length 50.0 m, breadth 8.0 m, depth 4.0 m is floating in salt water at a draught of 2.20 m forward and 2.40 m aft. Find the new draught if a weight f 40 t is discharged from a position 10.0 m from forward. MCTC 12. **(10)**

OR

Q. 1 A ship 130m long is floating at draughts 4.90m forward and 6.10m aft. The centre of floatation is 5.0 m aft of midships. MCTC 220, Displacement 5500t. Calculate the new draughts if 100t is shifted forward a distance of 50m. **(10)**

Q.2 The TPC value of ship at 1.2 m intervals of draught commencing at keel, are 8.2,16.5,18.7,19.4,20.0,20.5 and 21.1 respectively. Calculate the displacement at 7.2 m draught? **(10)**

OR

Q.2 A ship 180m long has ½ widths of water plane of 1, 7.5, 12, 13.5, 14,14,14,13.5,12,7, and 0 m respectively. Calculate **(10)**

a)water plane area,

b) TPC

c) Water plane area of coefficient?

Q.3 a) The residuary resistance of a model 7m long is 20 N when towed at 3.5 knots, Calculate the power required to overcome the residuary resistance of a similar ship 140 m long at its corresponding speed? **(10)**

b) A ship uses 20 tonne of fuel per day at 13 knots. Calculate the daily consumption at 11 knots?

SECTION: II

Q.4 Define following **(10)**

a) vanishing stability

b) wetted surface area

c) stable and unstable ship

d) DWA

e) TPC

OR

Q.4 Define following **(10)**

a) free surface effect

b) Rightening lever

c) angle of loll

d) reserve buoyancy

e) FWA?

Q.5 A ship of 4000 tonne displacement has its centre of gravity 1.5 m aft of midships and 4 m above the keel, now loads 200 tonne of cargo 45m forward of midships and 12 m above the keel. Calculate the new position of the centre of Gravity? **(10)**

OR

Q.5 A ship of 6000 tonne displacement is composed of masses of 300,1200 and 2000 tonne at a distance of 60,35 and 11 m aft of midships, and masses of 1000,1000 and 500 tonne at distance 15,30 and 50 m forward of midships, Calculate the distance of the centre of Gravity of the ship from midships? **(10)**

Q.6 A ship of 7000 tonnes displacement, length 140 m, lies on a draught of 7.40 m forward and 8.20 m aft. MCTC 120, TPC 22, KG= 8.0 m KM= 10 m **(10)**

Cargo to load : 200t @ 6.0 kg

Cargo to load : 400 t @ 7.0 kg

Cargo to load : 500 t @ 6.5 kg

Cargo to Discharge: 300 t @ 7.5 kg

Calculate final GM? Calculate Fluid GM if a Free surface moment of 1300 is caused by ships partially filled tank?

----------END OF PAPER----------