Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-VIII Examination May 2012

Subject code: 181806

Subject Name: Naval Architecture-II

Date: 16/05/2012 **Time: 10.30 am – 01.00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** What is Longitudinal stability of ship? **07**

(b) Explain in brief change of trim due to adding or deducing weights. A ship 150m long has draught of 7.70m forward and 8.25m aft, MCTI cm 250 tonne m, TPC 26 and LCF 1.8m forward of midships. Calculate the new draughts after the following masses have been added **07**

50 tonne , 70m aft of midships
170 tonne, 36m aft of midships
100 tonne, 5m aft of midships
130 tonne , 4m forward of midships.

Q.2 **(a)** Explain in brief change in mean draught due to change in density. Also explain loss of stability due to grounding. **07**

(b) 215 tonne of oil fuel and stores are used in a ship while passing from sea water of 1.026 t/m^3 into river water of 1.002 t/m^3. If the mean draught remains unchanged, calculate the displacement in the river water. **07**

OR

(b) A box barge 30m long and 8m beam floats at a level keel draught of 3m and has a mid-length compartment 6m long. Calculate the new draught if this compartment is bilged **07**

(1) With **μ =100%**
(2) With **μ =75%**

Q.3 **(a)** Expain different types of propeller. Establish relation between mean pressure and speed of propeller. **07**

(b) A propeller of 4.5 m pitch turns at 120 rev/min and drives the ship at 15.5 Knots. If the wake fraction is 0.30. Calculate the apparent slip and the real slip. **07**

OR

Q.3 **(a)** What is quasi propulsive coefficient (QPC) ? What is the significance of QPC ? **07**

(b) Calculate the indicated power for following data. The total resistance of a ship at 13 Knots is 180 KN, the QPC is 0.70, shaft losses 5% and the mechanical efficiency of machinery 87%. **07**

Q.4 **(a)** Explain the forces caused by rolling and pitching. **07**

(b) Explain following terms **07**

(1) Trochoidal waves
(2) Sinusoidal waves
(3) Cavitations of blade

OR

Q.4	**(a)**	State the different types of rudders used in ship. Explain in brief angle of heel.	**07**
	(b)	A ship with a metacentric height of 0.4m has a speed of 21 knots. The center of gravity is 6.2m above the keel, while the center of lateral resistance is 4m above the keel. The rudder is put hard over to port and the vessel turns in a circle 1100m radius. Calculate the angle to which the ship will heel.	**07**
Q.5	**(a)**	Explain in detail Blade element theory	**07**
	(b)	How flooding calculations are carried out.	**07**
		OR	
Q.5	**(a)**	Explain in detail forces and torque acting on rudder and stock respectively.	**07**
	(b)	Explain in brief rolling of ship in resisting media and unresisting media.	**07**

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