*Name* : .....

*Roll No.* : .....

*Invigilator's Signature* : .....

**CS/BNS/SEM-4/BNS-406/2011**

**2011**

# NAVAL ARCHITECTURE - II

*Time Allotted* : 3 Hours Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

## GROUP – A

## ( Objective Type Questions )

1. Answer the following questions : 10 × 1 = 10

A) Select the correct alternatives :

i) Free Surface Correction depends on

a) length & breadth of a slack tank

b) location of the tank on the vsl

c) centre of gravity of a tank.

ii) Anodes are fitted on ships

a) to reduce marine growth

b) to reduce corrosion

c) to increase speed.

iii) In a stiff vsl the rolling of ship is

a) smooth

b) smooth and regular

c) violent and irregular.

iv) If there are 6 ordinates, the Simpson's rule that can be applied

a) Simpson's first and second rule

b) Simpson's second rule

c) Simpson's second and third rule.

v) To correct an angle of loll, fill up the

a) lank on the low side

b) tank on the high side

c) tank on the low side and high side together.

B) Write *True* or *False* :

vi) When wt. is lifted the COG shifts to Derrick Head.

vii) Metacentric Height is the Vertical Distance between Keel & Metacentre.

viii) KN curves are drawn for an assumed value of zero kg.

ix) GZ is a function of KG, KM & Angle of Heel.

x) Dynamical stability does not depend on displacement.

## GROUP – B

### ( Short Answer Type Questions )

Answer any *three* of the following. 3 × 5 = 15

2. State the remedial action to correct angle of loll. 5

3. Explain with neat diagrams :

   a) Stable ship 2

   b) Block coefficient. 3

4. A boat cover is 10 m long. Breadths are measured at equal intervals from forward are 5

   0·00, 2·25, 3·00, 2·25 & 0·00 respectively. Find its area. 5

5. A lower hold is 20 m long. The transverse cross-sectional areas, at fixed intervals from forward are 120, 116, 101, 80 $m^2$ s.

   Find the volume of the lower hold.

## GROUP – C

### ( Long Answer Type Questions )

Answer any *three* of the following. 3 × 15 = 45

6. Explain with Diagram :

   a) Information that can be obtained from Curve of Statical Stability. 5

   b) Unstable Ship. 5

   c) Longitudinal Metacentre. 5

7. A Ship is floating in SW drafts of 4·8 fwd. & 6·8 m aft. AG ( LCG ) is 69·04 m. Find the new drafts fwd & aft if 1000 *t* of cargo is loaded in No. 3 LH, AG ( LCG ) 80 m.

LOA 150 M, LBP 140 M, Load Displ 19943, Light Displ 6000 *t*

| *DRAFT* | *W* | *TPC* | *MCTC* | *AB* | *AF* |
|---|---|---|---|---|---|
| 5.6 | 11223 | 22·3 | 169·9 | 71·990 | 71·671 |
| 5.8 | 11672 | 22·37 | 171·3 | 71·977 | 71·586 |
| 6.0 | 12122 | 22·45 | 172·9 | 71·960 | 71·472 |
| 6.2 | 12575 | 22·54 | 174·6 | 71·939 | 71·329 |
| 6.4 | 13030 | 22·64 | 176·4 | 71·914 | 71·172 |

15

8. Draw and label a neat diagram of F. Pk Tank of a ship. State how the strengthing against Panting Forces is carried out within this. 15

9. a) Sketch and label a transversely framed Double Bottom Tank of a Dry Cargo Ship. 7

   b) Distinguish between an unbalanced, semi-balanced & balanced Rudder. 3

   c) Define with a help of sketch, Parallel Middle Body, Moulded Depth and Flare. 5