B.Tech. Degree VI Semester Regular Examination in Marine Engineering June 2022

19-208-0607 NAVAL ARCHITECTURE II
(2019 Scheme)

Time: 3 Hours

Maximum Marks: 60

Course Outcome
On successful completion of the course, the students will be able to:

CO1: Understand the basic concepts of strength of ship and calculate bending moment and deflection.
CO2: Gain knowledge regarding propellers and design propeller.
CO3: Calculate the forces acting on rudder and angle of heel while turning.
CO4: Explain how the ocean waves affect the rolling pitching and yawing.
CO5: Understand the different sources of ship vibration and the prevention of vibration.
Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze,
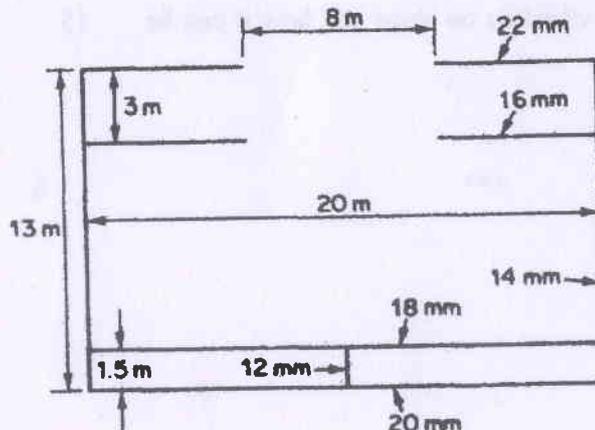L5 – Evaluate, L6 – Create
PO – Programme Outcome

PART A
(Answer *ALL* questions)

		(5 × 15 = 75)	Marks	BL	CO	PO
I.	Compute section modulus for the below midship section:		15	L3	1	2.3.1

OR

| II. | A box-shaped barge of uniform construction is 32 m long and displaces 352 tonnes when empty, is divided by transverse bulkheads into four equal compartments. Cargo is loaded into each compartment and level stowed as follows: | 15 | L3 | 1 | 2.3.1 |

No. 1 hold – 192 tonnes
No. 2 hold – 224 tonnes
No. 3 hold – 272 tonnes
No. 4 hold – 176 tonnes
Construct load, shearing force and bending moment diagram.

| III. | Explain the following features of screw propeller with neat sketches: | 15 | L2 | 2 | 1.4.1 |

Diameter, boss, leading edge, trailing edge, skew, rake, tip, face, back and skew.

OR

(P.T.O.)

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IV.	(a)	Explain any three types of propellers with sketches along with their application.	10	L1	2	1.4.1
	(b)	Distinguish between FPP and CPP.	5	L2	2	1.4.1
V.	(a)	Using suitable sketch describe a typical rudder and explain the following parameters: Span, chord, aspect ratio, taper ratio, leading and trailing edge, root and tip	10	L2	3	1.4.1
	(b)	Explain why unbalanced rudders are not used in ships.	5	L1	3	1.4.1
		OR				
VI.		What are the various factors effecting force on the rudder? Also explain how action of rudder turns ship?	15	L2	3	1.4.1
VII.	(a)	Compare the features of sinusoidal and trochoidal waves.	10	L2	4	1.4.1
	(b)	What are the various dynamic motions of ship?	5	L1	4	1.4.1
		OR				
VIII.		Explain different methods for reducing ship rolling motion.	15	L2	4	1.4.1
IX.		Explain the following terms related to vibration of ships.	15	L2	5	1.4.1
		(i) Node & Anti-node (ii) Mode (iii) Amplitude & Frequency (iii) Resonance or synchronization				
		OR				
X.		Explain the major causes for vibration on ships and how it can be reduced.	15	L2	5	1.4.1

Blooms's Taxonomy Levels
L1-14%, L2-66%, L3-20%

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