



# UNIVERSITY OF RUHUNA

## Faculty of Engineering

End-Semester 5 Examination in Engineering: May 2023

**Module Number: MN 5207      Module Name: Ship Design and Construction  
Technology II**

**[Three Hours]**

**[Answer Five Questions only]**

---

### Instructions:

1. Attempt five questions inclusive of Question 1 which is mandatory.
2. Question 1 carries 18 Marks while all other questions carry 13 Marks each.
3. Neatness in handwriting and clarity in expression carry weightage.

Q1 (a) State in detail, the functions and roles of the parties involved in a new ship construction till its delivery.

[18 Marks]

Q2 The following questions are in reference to a ship's rudder.

(a) Explain why a breached hollow rudder can add to fuel costs.

[05 Marks]

(b) Explain why excessive pintle clearance should not be tolerated.

[05 Marks]

(c) Explain why fitted bolts are used in connecting upper and lower stocks.

[03 Marks]

Q3 (a) Write notes on below topics with respect to their roles.

i. Baltic exchange.

[04 Marks]

ii. International Maritime Organisation (IMO).

[04 Marks]

(b) State the number of members in the International Association of Classification Societies (IACS)? Explain the differences between a Classification Society and a Flag state.

[05 Marks]

Q4 (a) Define the term "freeboard".

[04 Marks]

(b) Sketch and describe the freeboard markings.

[04 Marks]

(c) What factors govern the position of the markings described in Q4 (b) above? Provide a brief explanation.

[05 Marks]

Q5 (a) Provide details of the spaces in a ship according to their installation. Use sketches where necessary.

[08 Marks]

(b) Explain how they are thermically barriered with respect to installations illustrated above in Q5 (a).

[05 Marks]

Q6 Illustrate the following with simple sketches relevant to the ships anchor arrangement,

(a) Type of anchors used.

[08 Marks]

(b) Cable stopper.

[05 Marks]

Q7 Describe with the aid of sketches how each of the following contribute towards improving the propulsive efficiency of a ship,

(a) Ducted propeller.

[05 Marks]

(b) Conventional propeller with skewed blades.

[05 Marks]

(c) Controllable pitch propeller.

[03 Marks]