



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 6 Examination in Engineering: November 2022

Module Number: ME6214

Module Name: Naval Architecture and Basics of Hull Design

[Three Hours]

[Answer all questions, each question carries 10 marks]

Q1 a) Briefly explain following.

- i. The IMO and the main focusses
- ii. The Flag states
- iii. The role of recognized organization

[6 Marks]

b) Discuss following in brief

- i. International Code on Intact Stability, 2008
- ii. International Load line convention

[4 Marks]

Q2 a) List out the chapters covered by Convention of Safety of Life at Sea (SOLAS).

[2 Marks]

b) Discuss your understanding about Convention of Marine Pollution (MARPOL).

[2 Marks]

c) Discuss Small Commercial Vessel Code in brief.

[2 Marks]

d) Explain following with neat sketches where necessary.

- i. After perpendicular (AP)
- ii. Forward perpendicular (FP)
- iii. Length overall (LOA)
- iv. Difference between molded and extreme dimensions of a vessel

[4marks]

- Q3 a) Discuss the lesson learnt out of the Titanic disaster as far as structural failure and evolution of safety regulations are concerned. [5 Marks]
- b) Describe reserve of buoyance & the margin line and the impact of them on the stability of vessels. [5 Marks]
- Q4 a) Discuss the method of floodable length curve is drawn [4 Marks]
- b) Discuss the terminology "Permeability" in brief. [1 Mark]
- c) Write brief descriptions of the Criteria on righting lever curve properties stipulated in Intact Stability code 2008. [5 Marks]
- Q5 a) Discuss briefly on sloshing force. [1 Mark]
- b) Discuss SWASH Bulkhead with the help of a sketch. [2 Marks]
- c) Discuss three basic categorizations of the torsional vibration and how the effects of torsional vibrations may be mitigated. [3 Marks]
- d) Briefly describe following related to the ship propulsion with the aid of sketches as necessary.
- i. Brake Horse Power (BHP)
 - ii. Shaft Horse Power (SHP)
 - iii. Delivered Horse Power (DHP)
 - iv. Thrust Horse Power (THP) [2 marks]
 - v. Total Hull Resistance [2 marks]