



UNIVERSITY OF RUHUNA  
FACULTY OF FISHERIES AND MARINE SCIENCES & TECHNOLOGY

Academic Year 2023/2024

Bachelor of Science Honours in Fisheries and Marine Sciences Degree/ Bachelor of  
Science Honours in Marine and Freshwater Sciences Degree

Level II Semester II Examinations – April/May 2025

OCG 2233: Chemical Oceanography - Theory

Section II

Answer only **Three (03)** questions.

01 Hour 30 minutes/ 75 Marks

1. Explain,
  - a. The vertical distribution of oxygen and nitrogen in Atlantic and Pacific oceans. (07 Marks)
  - b. The reasons for formation of oxygen minimum zones in the northern Indian Ocean (Arabian Sea and Bay of Bengal). (06 Marks)
  - c. The oxygen variability impact on the denitrification in Bay of Bengal. (12 Marks)
2. Explain the **seven (07)** different types of trace elements' behaviour in the ocean, giving suitable vertical profile diagrams and examples. (25 Marks)
3. Discuss the following,
  - a. Marine Carbonate system (10 Marks)
  - b. Ocean acidification and its impact on marine organisms (15 Marks)
4.
  - a. Briefly explain the sources and sinks of phosphorus in the ocean (10 Marks)
  - b. Explain the different forms of phosphorous and their transformation in the water column using a suitable flow diagram. (15 Marks)
5. Write short notes on any **three (03)** of the following.
  - a. Interactions of elements in seawater with marine organisms.
  - b. Impact of iron availability on Atlantic nitrogen fixation.
  - c. The factors affecting salinity
  - d. Why are some elements, such as Zn or Si, greatly enriched in deep waters of the North Pacific relative to the deep North Atlantic, while other elements such as Al and Pb are greatly depleted?
  - e. Role of microbes in the Nitrogen Cycle(25 Marks)

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