



UNIVERSITY OF RUHUNA

FACULTY OF FISHERIES AND MARINE SCIENCES & TECHNOLOGY

Academic Year 2023/2024

Bachelor of Science Honours in Marine and Freshwater Sciences Degree

Level III Semester II Examination - April /May 2025

OCG 3272 – Paleooceanography and Paleoclimatology

Time: 2 hours

Answer Any four (04) Questions

1.
  - a) What are the external factors that control Earth's climate? Briefly outline. (10 marks)
  - b) Explain how solar insolation changes influenced the climate in the South Asian region. (15 marks)
2.
  - a) What is the polar position hypothesis? Explain. (10 marks)
  - b) Using an example discuss how orogenesis influences regional climate. (15 marks)
3.
  - a) Compare and contrast the use of biostratigraphy and lithostratigraphy in relative dating. (10 marks)
  - b) What is the best technique for determining the absolute age of speleothems? Explain the method and its limitations. (15 marks)
4.
  - a) How does an  $\delta^{18}\text{O}$  from ice core record differ from a marine  $\text{CaCO}_3$ -based  $\delta^{18}\text{O}$  record in reconstructing global climate? (10 marks)
  - b) How can we use corals to interpret the past climate? Discuss the theory, limitations, and benefits. (15 marks)
5.
  - a) What are Heinrich events? How do they relate to the Dansgaard-Oeschger (D-O) events? (10 marks)
  - b) Discuss any Holocene climate event. Your answer should include the triggering mechanism of the event, the impacts on the planet and humanity (if relevant), and the impacts on Sri Lanka. (15 marks)
6.
  - a) Briefly discuss the factors influencing eustatic sea level (10 marks)
  - b) Discuss the generalized sea level changes that have occurred in the tectonically stable equatorial regions since the last interglacial. (15 marks)

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