

UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE IN FISHERIES AND MARINE SCIENCES DEGREE
Level IV Semester II – December 2016/ January 2017

OCG 4222 – Essays and Seminars

Answer Both questions

Time: 1 ½ hours

01. As discussed in Fry et al, 2015, global ocean alkalinity is controlled by several processes.
- a) Describe the control factors (30 points)
 - b) Briefly explain how can you remove the effect of above process on alkalinity and derive the residual alkalinity (35 points)
 - c) Describe the global residual alkalinity distribution and controlling processes (35 points)
02. Smith et al, 2008 discuss the potential impacts of one proposed means of climate change mitigation on deep-sea ecosystems. To mitigate anthropogenic emissions of CO₂ into the atmosphere, artificial Iron (Fe) enrichment of high nutrient low chlorophyll (HNLC) regions over large spatial scales has been proposed as a technique to sequester large amounts of carbon in the deep ocean.
- a) Briefly discuss the existing community structure and abyssal diversity in terms of spatial and temporal patterns of biomass, diversity and energy fluxes. (20 points)
 - b) Briefly discuss the expected effects of climate change on abyssal communities. (30 points)
 - c) Briefly discuss the efficacy of the Fe fertilization technique and its positive and negative effects. (20 points)
 - d) Discuss how artificial Iron (Fe) enrichment in upper-ocean surface will affect the community structure and biodiversity in abyssal ecosystems (provide suitable scenarios).(30 points)

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