



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 6 Examination in Engineering: February 2020

Module Number: CE 6253

Module Name: Ecological Engineering

[Three Hours]

[Answer all questions, each question carries TWELVE marks]

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- Q1. a) Ecosystem distribution is influenced by climatic conditions prevail in an area.
- i) Describe the dominant climatic factors influenced in creating hot deserts. [2 Marks]
 - ii) Explain the importance of temperature as an environmental factor. [2 Marks]
- b) "Predator-pray relationship is an essential component in ecosystem functioning." Evaluate this statement. [4 Marks]
- c) Decomposers digest dead animals and plants. Discuss the importance of this digestion process on functioning of ecosystems. [4 Marks]
- Q2. a) Explain the role of following groups in the given nutrient cycle.
- i) Forests in Hydrological cycle [2 Marks]
 - ii) Animals in Carbon cycle [2 Marks]
- b) Human interactions with ecosystems have many negative impacts on ecosystems.
- i) Describe **four** main human induced impacts on grassland ecosystems. [4 Marks]
 - ii) Evaluate the negative impacts of pollution of oceans specifying the services provided by the oceans for global ecosystem functioning. [4 Marks]
- Q3. a) Constructed wetlands and floating wetlands have emerged as viable wastewater treatment techniques in the global level.
- i) What are the benefits of having constructed wetlands for treating wastewater? [2 Marks]
 - ii) Discuss **two** advantages of using a subsurface flow constructed wetland over a surface flow constructed wetland in Sri Lanka. [3 Marks]
 - iii) Explain the role of plants in floating wetlands. [3 Marks]
- b) Evaluate the advantages of using floating wetlands in reducing pollutants in urban lake water. [4 Marks]

- Q4. Storm water management is among top priorities in modern urban planning.
- a) Green roofs can be utilized as an effective technique in storm water management. How you are going to convince this to town planners? Explain with examples. [4 Marks]
 - b) Describe how city landscaping features and storm water management techniques can be combined. [4 Marks]
 - c) You are requested to involve in storm water management to Colombo city. Describe two main activities you will recommend. [4 Marks]
- Q5. a) Explain the possible reasons and/or scenarios behind following observations.
- i) Lake A is green in color. [3 Marks]
 - ii) On a morning, a mass scale fish kill incident is observed in Lake B. [3 Marks]
- b) It is planned to construct concrete walls along banks of a stream flowing through an urban area. Evaluate potential impacts of this plan. [3 Marks]
- c) Human induced plant invasion happened in terrestrial and aquatic ecosystems in many parts of the world. Describe this occurrence with examples. [3 Marks]