



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 6 Examination in Engineering: January 2022

Module Number: CE 6253

Module Name: Ecological Engineering

[Three Hours]

[Answer all questions, each question carries TWELVE marks]

- Q1. a) Ecosystem distribution is influenced by climatic conditions prevail in an area.
- Describe the dominant climatic factors influenced in creating hot deserts. [2 Marks]
 - 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.
- Plants in Carbon cycle [2 Marks]
 - Animals in Nitrogen cycle [2 Marks]
- b) Human interactions with ecosystems have many negative impacts on ecosystems.
- Describe four main human induced impacts on grassland ecosystems. [4 Marks]
 - 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.
- What are the benefits of having constructed wetlands for treating wastewater? [2 Marks]
 - Evaluate the advantages of using a floating wetland in reducing pollutants in an urban lake. [3 Marks]

iii) Explain main pollutant removal mechanisms in floating wetlands.

[3 Marks]

b) Planted wetland systems are suitable for secondary wastewater treatment in Sri Lanka. Evaluate this statement with examples.

[4 Marks]

Q4. Storm water management is among top priorities in modern urban planning.

a) Discuss the problems arisen due to poor storm water management in Sri Lankan cities. 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 in a residential area located in Colombo city. Describe TWO main activities you will recommend.

[4 Marks]

Q5. a) Explain the possible reasons and/or scenarios behind following observations.

i) Water in a stream appears to be stagnant and black in color.

[3 Marks]

ii) A rapid increase in aquatic plant growth is observed in a lake.

[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) Describe three techniques that can be used in restoring a degraded forest ecosystem.

[3 Marks]