

**UNIVERSITY OF RUHUNA**  
**BACHELOR OF SCIENCE (SPECIAL) DEGREE LEVEL I (SEMESTER II)**  
**EXAMINATION – FEBRUARY 2018**

**SUBJECT: BOTANY**

**COURSE UNIT: ADVANCED ENVIRONMENTAL SCIENCE (BOT 4142)**

**Time: Two hours**

**Index No.....**

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Answer three questions **ONLY**, including question No. 1 and 2

1)

i) What do you mean by the following terms?

a) Sustainable ecosystem

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b) Environmental Biotechnology

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c) Ecological footprint analysis

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d) Phytoremediation

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ii) Name five different strategies of phytoremediation

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iii) Write five factors to be considered in the selection of plant species to be used for phytoremediation.

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iv) Highlight four main limitations of physical and chemical remediation methods which are applied in the remediation of contaminated soil.

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v) List four main global issues to be studied in order to get an idea about the global environment

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vi) Define the following terms.

a) Composting

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b) Environmental Impact Assessment (EIA)

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vii) List four main objectives of EIA

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viii) Name five types of typical project proposals which require full scale EIA in Sri Lanka.

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ix) Highlight five challenges in the Environmental Impact Assessment (EIA) in Sri Lanka

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x) Name three types of biological purification systems used to treat waste gases.

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xi) Briefly explain the followings

a) High concentration of biodiversity hotspots are in an equatorial region of the Earth.

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b) Importance of aeration in the composting process

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c) Stabilization of compost

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d) Metal hyperaccumulators

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**(60 minutes)**

2) i) a) Define the term "Biodiversity".

b) Name three common metrics used to measure species-level biodiversity.

c) What is the major significance of measuring biodiversity?

ii) a) What do you mean by the term biomonitoring?

b) Name five physico-chemical parameters which should be measured in the calculation of water quality index (WQI) for a water body.

c) Briefly describe the procedure that you would adopt in the calculation of Palmer pollution index for a water body.

d) Highlight the importance of the calculation of Palmer pollution index compared to chemical analyses in water quality monitoring.

**(30 minutes)**

3) Write an account on the followings

i) Anthropogenic impacts on global nitrogen cycle.

ii) Main stages of anaerobic digestion process of municipal solid waste.

**(30 minutes)**

4) a) Briefly explain the value of biodiversity as a natural resource.

b) Briefly describe the reasons for declining of biodiversity.

**(30 minutes)**