584

The Open University of Sri Lanka

Faculty of Natural Sciences

B.Sc/ B. Ed Degree Programme

Department	: Zoology
Level	: 4
Name of the Examination	: Final Examination
Course Code and Title	: ECOLOGY – ZYU4301
Academic Year	: 2021/2022
Date	: 08.10.2022
Time	: 9.30 am – 11.30 am
Duration	: 2 hours
Index number	:

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of 6 questions in 4 pages.
3. Question paper consists of two parts, part "A" and part "B". Answer question 1 from part "A" and any three questions from part "B". Please note that question 1 is compulsory and the answers should be written in the space provided.
4. Answer for each question should commence from a new page.
5. Draw fully labelled diagrams where necessary.
6. Having any unauthorized documents/ mobile phones in your possession is a punishable offense
7. Use blue or black ink to answer the questions.
8. Circle the number of the questions you answered in the front cover of your answer script.
9. Clearly state your index number in your answer script

PART "A"

QUESTION 1

1.1 a) What is a biogeochemical cycle?

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b) Explain the reservoirs and pathways of a biogeochemical cycle.

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c) List three (3) important characteristics of a biogeochemical cycle.

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d) Giving examples, explain the global cycles and local cycles.

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e) Illustrate a generalized biogeochemical cycle.

1.2 a) Explain the major processes in a Hydrological cycle.

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b) List the main processes in the carbon cycle.

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c) What is carbon sequestration?

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d) Explain what is a "carbon footprint"?

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e) If "A" vehicle consumes 10.5 liters of diesel per 100 km and "B" vehicle consumes 10.5 liters petrol per 100 km. Both vehicles are driven for a distance of 200 km. Calculate the fuel consumption for both A and B vehicles and the carbon footprint.

The Carbon emissions values for each fuel type (per unit)

- For 1 liter Petrol, CO2 emitted per unit is 2.3 kg
- For 1 liter Diesel, CO2 emitted per unit is 2.7 kg

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PART "B"

ANSWER ANY THREE (03) QUESTIONS

2. i) Explain briefly the Hutchinson's concept of niche. (20 marks)

   ii) The main niche of a species is determined by several different (sub) categories of niches. Describe these important sub niches for a particular species. (16 marks)

   iii) Giving a suitable diagram, explain the difference between fundamental niche and realized niche. (20 marks)

   iv) Explain the properties of a niche. (44 marks)

3. i) Discuss the productivity of an ecosystem. (35 marks)

   ii) Giving appropriate examples, explain two major food chains found in nature. (14 marks)

   iii) Draw a food web diagram for a grassland community and determine the trophic status of each species in the food web. (16 marks)

   iv) Explain trophic levels and ecological pyramids. (35 marks)

4. i) Describe the major forces that influence the population growth in a closed and an open populations. (10 marks)

   ii) Compare the characteristics and growth models of discrete generation populations and overlapping generation populations derived by Lotka and Voltera. (30 marks)

   iii) Explain the Logistic growth curve. (60 marks)

5. i) What are the main differences between primary succession and secondary succession? (10 marks)

   ii) Clement (1916) was the first to describe plant succession as a dynamic process and common to all vegetation types. Briefly explain, the major phases in the succession based on plants. (40 marks)

   iii) Briefly describe the major environmental conditions in mangrove ecosystems. (20 marks)

   iv) Explain how mangrove plants adopted to overcome those environmental conditions. (30 marks)

6. Write short notes on any two of the following.

   a) Prey Predator isoclines. b) Broad and narrow tolerance curves.

   c) Green House Effect