



UNIVERSITY EXAMINATIONS

**THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE IN BIOCHEMISTRY**

BIOC 314: ENVIRONMENTAL BIOCHEMISTRY

STREAMS: BIOC

TIME: 2 HOURS

DAY/DATE: THURSDAY 11/4/2024

2.30 P.M. –4.30 P.M.

INSTRUCTIONS:

- Answer question one and any other two questions
- Sketch diagrams may be used whenever they may help to illustrate your answer
- Do not write anything on the question paper
- This is a closed book exam. No reference materials are allowed in the examination room
- There will be No use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

QUESTION ONE (30 MARKS)

1. Describe the nitrogen cycle. (8 marks)
2. Differentiate between point-source and non-point source water pollution.(2 marks)
3. Discuss FOUR factors affecting and eventually leading to the depletion of the ozone layer. (8 marks)
4. List FOUR different sources of environmental contaminants. (4 marks)
5. Discuss FOUR microbial interventions in bioremediation of heavy metals(8 marks)

QUESTION TWO (20 MARKS)

1. List THREE potential solutions on environmental pollution. (3 marks)
2. (a) Outline TWO alternatives to excess pesticide used in agriculture (2 marks)
(b) Define the ‘One Health Concept’ and briefly explain FIVE ways to maintain environmental health embracing the One Health Concept. (7 marks)
3. Describe microbial transformation of carbon (8 marks)

QUESTION THREE (20 MARKS)

1. Discuss the FOUR steps of phosphorous transformation in soil. (8 marks)
2. Explain eutrophication of water. (4 marks)
3. Explain hydrogen gas as an alternative to methane gas. (2 marks)
4. Briefly describe the following and cite an example in each. (6 marks)
 - (a) Biodegradation
 - (b) Bioremediation
 - (c) Persistent organic pollutants

QUESTION FOUR (20 MARKS)

1. Discuss the formation of the ozone (O³) layer. (8 marks)
2. List THREE emerging global environmental pollution problems. (3 marks)
3. Explain vermicompositing as a method to reduce usage of fertilizers on soils. (2 marks)
4. Describe the sulphur cycle. (7 marks)

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