

**Faculty of Science**  
**DEPARTMENT OF BIOLOGICAL SCIENCES**  
**2024/1 EXAMINATION**

**COURSE CODE: BIO 405**  
**COURSE TITLE: HYDROBIOLOGY**  
**CREDIT UNIT: 2 UNITS**  
**TIME ALLOWED: 2 HOURS**

**INSTRUCTION: ANSWER QUESTION ONE AND ANY TWO OTHERS.**

- 1a. Explain eutrophication. (2 marks)
- b. Name the three principal sources of anthropogenic nutrient pollution. (3 marks)
- c. Give any four (4) differences between cultural eutrophication and natural eutrophication. (10 marks)
- d. Outline five (5) general effects of eutrophication on freshwater. (10 marks)
- e. Enumerate any five (5) values of freshwater biodiversity. (5 marks)
- 2a. Mention any four (4) importance of benthic invertebrates. (4 marks)
- b. Discuss the general features of any two (2) of the following water bodies:
- i) Wikki spring. (8 marks)
  - ii) Lake Tanganyika. (8 marks)
  - iii) Lake Chilwa. (8 marks)
- 3a. Differentiate between phytoplankton and periphyton. (6 marks)
- b. Describe the processes of production in freshwater ecosystem. (10 marks)
- c. Enumerate any four (4) factors that influence productivity of an ecosystem. (4 marks)
- 4a. Distinguish water pollutants from water pollution. (2 marks)
- b. Discuss any three (3) of the following major water pollutants: (18 marks)
- i) Wastewater and Sewage
  - ii) Industrial Waste
  - iii) Fossil Fuels
  - iv) Sewer Line Leaks
  - v) Fertilizers and Pesticides.
- 5a. What do you understand by the term 'microfauna'? Give four (4) examples of microfauna. (6 marks)
- b. Describe the procedure of enumerating sediment microfauna. (10 marks)
- c. The macrofauna are often called ecosystem engineers. Write two (2) reasons why they deserve that name. (4 marks)
- Macrofauna are able to ameliorate soil physical structure, mineral and organic matter composition, and hydrology.
  - Influencing nutrient and energy flow and forming a connection between the food chains of the foliage and the soil.