MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR …….. SEMESTER EXAMINATION FOR

BACHELOR OF ……

SZL 312: LIMNOLOGY

DATE: **TIME :**

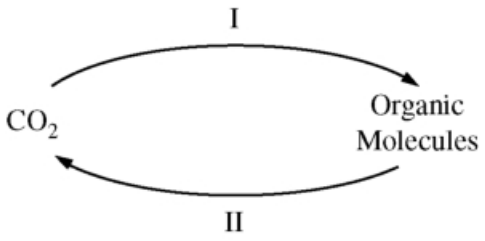
INSTRUCTIONS

……

Section A (compulsory)

1.

a) The following diagram describes key processes that occur in limnological systems



i. Identify and describe the processes in steps I & II (4 marks)

ii. Identify three types of organisms that carry out both processes in limnological systems (3 marks)

iii. Describe three (3) mechanisms by which organisms overcome life challenges in the open sections of theses limnological systems (3 marks)

b) Some aquatic ecology students determined the depth - oxygen profile in two lakes (A and B). Lake A was located within a highly populated environment with lots of domestic, agricultural and industrial activities within its watershed. Lake B was located in a flat dry area with little

rainfall, poor soils and hence scarce settlements and little human activities. By use of diagrams, illustrate the likely depth-oxygen curves in lake A and B. (3 marks)

c) Explain how
   i. photosynthesis affects the chemical properties of a pond ecosystem (3 marks)
   ii. Energy flows within a stream in mount kenya. (3 marks)

d) Explain the significance of water movement in lentic systems (3 marks)

e) Outline 3 factors that affect light penetration in water bodies (3 marks)

f) Outline three items that constitute food for the Nekton of the profundal zone in a lake ecosystem (3 marks)

g) Explain the significance of the thermocline in a lake ecosystem. (2 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

2. The mode of origin of a lake influences its ecological characteristics. Discuss (20 marks)

3. Explain how the structure of a water molecule affects aquatic life (20 marks)

4. The physico-chemical conditions of Tana River have a great influence on its biological conditions. Discuss (20 marks)

5. An ecosystem is said to be a self-sustaining unit. Using a lake as an example, explain how this is so. (20 marks)