MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR
SECOND YEAR SECOND SEMESTER

SCHOOL OF PURE, APPLIED AND HEALTH SCIENCES
BACHELOR OF SCIENCE (INDUSTRIAL MICROBIOLOGY)

COURSE CODE: MIC 2205-1
COURSE TITLE: MICROBIAL ECOLOGY

DATE: 18TH APRIL 2024 **TIME: 0830-1030 HRS**

INSTRUCTIONS TO CANDIDATES

- Answer **ANY TEN (10)** questions
- Illustrate your answers with suitable diagrams and give appropriate examples wherever necessary.

Short answer Questions: Answer ANY 10 Questions (50 Marks)

1. Define the following terminologies: **(5 marks)**
    a) Quorum sensing **(1mark)**
    b) Allochthonous population**(1mark)**
    c) Rhizospere effect **(1mark)**
    d) Microbial guilds**(1mark**)
    e) Ecology**(1mark)**

2. Distinguish between the following terminologies as used in microbial ecology.   **(5marks)**
    a) Halophilic and barophilic species**(1mk)**
    b) Ecosystem stability and resilience**(2mks)**
    c) Commensalism and ammensalism**(1mks)**
    d) Oligotrophic and eutrophic   **(1mk)**

3. Discuss the role played by microrganisms in the following aspects: **(5 marks)**
    a) Organic matter decomposition. **(3 marks)**
    b) Bioremediation.   **(2 marks)**

4. Using necrotic maize lethal disiase (NMLD) , discuss the effects of plant diseases on social, economic and political aspects of human life.   **(5 marks)**

5. Describe the major microbial populations in the soil   **(5 marks)**

6. Compare and contrast the fertility of the oceans, inland lakes and rivers.   **(5 marks)**

7. State **SEVEN (7)** properties of ideal indicator organisms for water pollution.   **(5 marks)**

8. Explain the atmosphere as an extreme environment.   **(5marks)**

9. Using *Trichoderma* **spp** describe any **THREE (3)** negative microbial interactions.   **(5 marks)**

10.   Give reasons why it is difficult to obtain a reasonably accurate estimate of the total viable microbial population in a soil sample.   **(5marks)**

11.   Illustrate the Sulfur cycle clearly indicating the microbes involved   **(5 marks)**

12.   Describe the **THREE (3)**microbial guilds found in the nitrogen cycle   **(5 marks)**

13.   Discuss the role of microorganisms in municipal water treatment   **(5 marks)**

14.   List **SEVEN**(7) conditions necessary for rhizosphere microorganism colonization   **(5 marks)**

15.   Describe the effect of physiochemical factors on aquatic microorganisms.   **(5 marks)**

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