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UNIVERSITY OF SWAZILAND

RESIT EXAMINATION PAPER

PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY YEAR 2, BACHELOR OF SCIENCE IN ANIMAL SCIENCE YEAR 2, BACHELOR OF SCIENCE IN ANIMAL SCIENCE (DAIRY OPTION) YEAR 2, BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY YEAR 2, BACHELOR OF SCIENCE IN CONSUMER SCIENCE YEAR 2, AND BACHELOR OF SCIENCE IN HORTICULTURE YEAR 2

COURSE CODE: CPR207

TITLE OF PAPER: MICROBIOLOGY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE CHIEF INVIGILATOR

QUESTION 1

A. Before staining (e.g. simple staining), a bacterial smear is fixed.
   (i) How is it fixed? (2 Marks)
   (ii) Why is it fixed? (2 Marks)

B. Describe five uses of each of the following microrganisms which are beneficial to humans
   (i) Fungi (5 marks)
   (ii) Algae (5 marks)
   (iii) Bacteria (5 marks)

C. (i) What is bioremediation and what are its benefits? (4 Marks)
   (ii) In microbial genetics, what is meant by degeneracy (2 Marks)

[25 Marks]

QUESTION 2

A. Explain the function of the following parts of a light microscope
   (i) Objective lenses (2 Marks)
   (ii) Diaphragm (2 Marks)
   (iii) Condenser (2 Marks)
   (iv) Ocular lens (2 Marks)

B. (i) Discuss the nutritional classification of microorganisms based on the combination of energy and carbon sources. (12 Marks)
   (ii) What are:
      a. Acidophiles (3 Marks)
      b. Lichens (2 Marks)

[25 Marks]

QUESTION 3

A. Define the following:
   (i) Generation time (3 Marks)
   (ii) Thermal death point (TDP) (3 Marks)
   (iii) Obligate parasite (3 Marks)
   (iv) Halophiles (3 Marks)
   (v) Interferons (3 Marks)

B. Genetically most bacteria are monomorphic, however, environmental conditions can result in pleomorphic bacteria.
   i. Explain what the statement means. (4 marks)
   ii. Give an example of a bacterium that is genetically pleomorphic. (2 marks)

C. Which microorganisms produce endospores and for what purpose? (4 Marks)

[25 Marks]

QUESTION 4

A. Discuss the different toxic forms of oxygen and how some microbes overcome the toxicity. (10 Marks)

B. Define the following:

a. A promoter (3 Marks)
b. A terminator (3 Marks)
c. An aseptate hyphae (3 Marks)
d. An enveloped virus (3 Marks)
e. An encapsulated bacterial cell (3 Marks)

[25 Marks]

QUESTION 5

A. (i) What are phagocytes (4 Marks)

ii) Describe the mechanism of phagocytosis. (8 Marks)

B. Explain how microbial evasion of phagocytosis occurs. (8 Marks)

C. List the five groups of bacteria based on their requirement for oxygen. (5 Marks)

[25 Marks]