



1ST SEMESTER RE-SIT EXAMINATION 2018/2019

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UNIVERSITY OF ESWATINI

RE-SIT EXAMINATION

PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY LEVEL 2, BACHELOR OF SCIENCE IN ANIMAL SCIENCE LEVEL 2, BACHELOR OF SCIENCE IN ANIMAL SCIENCE (DAIRY OPTION) LEVEL 2, BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY LEVEL 2, BACHELOR OF SCIENCE IN CONSUMER SCIENCE LEVEL 2, AND BACHELOR OF SCIENCE IN HORTICULTURE LEVEL 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 microorganisms 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:
 - i. Acidophiles (2 Marks)
 - ii. Facultative halophiles (3 Marks)
- [25 Marks]**

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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 (2 Marks)
 - (v) Interferons (4Marks)
- 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. Without using a diagram, describe the different phases of what happens to a bacterial population as it grows in a given medium. (15 marks)
- B. Given a jug of fresh milk that contains 10 000 bacteria per millilitre to be cultured, explain step by step how you would obtain a concentration of 10 bacteria per millilitre. (6 marks)
- C. From a Petri dish on which 1 mL of sour milk was cultured, after four serial dilutions were made, a total of 95 colonies were counted. What was the original number of bacterial cells per millilitre that were in the original sour milk? (4 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]**