BINDURA UNIVERSITY OF SCIENCE EDUCATION

BIOLOGICAL SCIENCES DEPARTMENT

BACHELOR OF SCIENCE HONOURS DEGREE IN BIOTECHNOLOGY

GENERAL MICROBIOLOGY (BZH105)/MICROBIOLOGY (BTEC131/BZH112)

EXAMINATION 2 HOURS (100 MARKS)

AUG 2024

INSTRUCTIONS

Answer FOUR (4) questions. You MUST answer QUESTION 1 from Section A and any THREE (3) questions from SECTION B. Each question carries 25 marks. Where a question contains subdivisions, the mark value of each part is given in brackets. Illustrate your answer were appropriate with large clearly labeled diagrams. You should not spend more than 30 minutes on each question.

SECTION A (COMPULSORY)

1. (a) Outline the procedures that are used in the laboratory to characterize microorganisms. [20]

   (b) Calculate the number of colonies in the original water sample, given that at 10^{-9} dilution rate two plates of this dilution have 75 and 83 cfu/ml counts. Assuming the experimenter will have used 100 µl for plating on each. [5]

SECTION B. Choose any THREE (3) from FIVE (5) questions below.

2. Write short notes on FIVE of any of the following items:
   (a) Koch's postulates. [5]
   (b) Hyphae. [5]
   (c) Prions. [5]
   (d) Psychrophile. [5]
   (e) Rhizobium. [5]
   (f) Antibiotic. [5]

3. (a) Discuss the economic importance of viruses. [10]
   (b) Outline the Baltimore classification of viruses. [15]

4. (a) Explain the reasons behind the use of the term Archael to extremophiles. [10]
   (b) Compare and contrast the ultrastructure of Gram positive and Gram-negative bacteria cell walls. [15]

5. Give an account of the factors that affect microbial growth.

6. (a) Describe the three main types of nutrition in fungi. [15]
   (b) Discuss the agricultural importance of Fungi. [10]

END OF EXAMINATION PAPER