

BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

AGH 112

Department of Crop Science
BSc Agricultural Science (Honours) Part I Examination
Introduction to Microbiology

3 HOURS (100 Marks)

MAR 2023

INSTRUCTIONS

Answer any **FOUR** questions. Each question carries **25 marks**.

1. a) Explain the mechanisms for three ways that DNA can be transferred from one prokaryotic cell to another. [15 marks]

b) Explain the importance of selective, differential, enriched and defined media in Microbiology, giving examples of each. [10 marks]
2. a) Classify bacteria according to their shape. [15 marks]
b) Describe the Gram Staining technique used to differentiate between Gram+ and Gram- cells. [10 marks]
3. a) Distinguish between the following groups of microorganisms:
 - i) Photoautotrophs and photoheterotrophs, [4 marks]
 - ii) Obligate aerobes and facultative anaerobes, [4 marks]
 - iii) Chemoautotrophs and chemoheterotrophs, [4 marks]
 - iv) Saprophytes and parasites, [4 marks]
 - v. Mycorrhizae and rhizobium. [4 marks]b) List five (5) nutrients required by microorganisms for their growth and development. [5 marks]
4. a) Explain any ten properties of viruses. [20 marks]
b) With the aid of a diagram, describe the structure of a viral particle. [5 marks]
5. a) With the aid of a diagram, describe the lifecycle of Ascomycetes. [10 marks]

b) Discuss any five (5) economic importance of fungi.

[15 marks]

6. a) With the aid of a diagram, explain microbial growth curve.

[15 marks]

b) Classify enzymes based on the type of reactions catalyzed.

[10 marks]

End of Exam Paper