BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF BIOLOGICAL SCIENCES
MSc APPLIED MICROBIOLOGY AND PLANT PATHOLOGY
MICROBIAL GENETICS AND MOLECULAR BIOLOGY (MPP 502)

2 HOURS (100 MARKS) NOV 2024

INSTRUCTIONS
Answer TWO out of the following questions. You MUST answer ONE question from Section A and ONE question from Section B. Each question carries 50 MARKS. Where a question contains subdivisions, the mark value of each subdivision is given in brackets. Illustrate your answers where appropriate with large, clearly labelled diagrams. You should not spend more than 1 hour on each question.

SECTION A

1 a. Differentiate between generalized and specialized transduction. (25 marks)

b. Outline in detail an experiment to demonstrate the process of transduction. (25 marks)

2 a. Discuss the adaptation of plasmids to random and directed partitioning during cell division. (30 marks)

b. Explain the significance of *Agrobacterium tumefaciens* tumor-inducing (Ti) plasmid in plant biotechnology. (20 marks)

SECTION B

3. Give a detailed account of the process of transcription in bacteria, highlighting the role of -10 and -35 promoter sequences in controlling the rate of gene expression.

4. Discuss the importance of knowledge of viral life cycles to medical control of viruses.

END OF EXAMINATION QUESTION PAPER