

BINDURA UNIVERSITY OF SCIENCE EDUCATION
BIOLOGICAL SCIENCES DEPARTMENT
HBScBioTec
ENVIRONMENTAL BIOTECHNOLOGY (BTEC413)

EXAMINATION
2 HOURS (100 MARKS)

JUN 2024

INSTRUCTIONS TO CANDIDATES

Answer **FOUR** questions. You **MUST** answer **QUESTION 1** (Section A) and any **THREE** questions from section B. Each question carries **25 MARKS**. Where a question contains sub-divisions, the mark value of each sub-division is given in brackets. Illustrate your answer where appropriate with large clearly labelled diagrams. You should not spend more than thirty minutes on each question.

SECTION A (COMPULSORY)

1. (a) Describe methods of isolating and culturing microorganisms capable of degrading a specific pollutant.

SECTION B

2. Write short notes on any **FIVE** of the following:
 - (a) Phytoextraction. (5 marks)
 - (b) Phytoremediation. (5 marks)
 - (c) Pollutants. (5 marks)
 - (d) Bioinsecticide. (5 marks)
 - (e) Biofungicide. (5 marks)
 - (f) Biodegrading enzyme. (5 marks)
3. (a) Outline the practical applications of environmental biotechnology in society. (15 marks)
(b) Give a detailed outline of Biosensors and the various types used in industry. (10 marks)
4. Discuss the application of bioremediation in the cleaning up of environments polluted with heavy metals.
5. Write an essay on the mechanisms and genetics of biological Nitrogen fixation.
6. Discuss major processes employed in the treatment of wastewater.

END OF EXAMINATION QUESTION PAPER