

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

AGH410/AGH411

Department of Crop Science
BSc Agricultural Science (Honours) Part IV Examination
Crop Biotechnology

3 HOURS (100 Marks)

JUN 2023

INSTRUCTIONS

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

1. Discuss the use of restriction enzymes in crop biotechnology. [25 marks]
2. (a) Discuss the use of tissue culture in secondary metabolites production. [10 marks]
(b) Analyse the integration of transgenes into the destination host genome. [15 marks]
3. Write notes on importance and availability of the following components of growth media
(a) Amino acids. [5 marks]
(b) Growth hormones. [10 marks]



Figure 1

- (c) Explain the significance of the set-up in figure 1 above to tissue culture. [15 marks]
4. (a) Explore methods of controlling any 5 disorders during tissue culturing. [15 marks]
(b) Outline the methods of GMO testing. [10 marks]
5. (a) Outline the development and significance of genetic libraries. [10 marks]
(b) Outline how transformed organisms can be identified after genetic engineering. [10 marks]
(c) State any 5 requirements of an ideal gene transfer technique. [5 marks]
6. (a) Explain the significance of *in vitro* fertilization in crop improvement. [15 marks]
(b) Outline the process of morphogenesis. [10 marks]

End of paper