



1<sup>st</sup> SEMESTER 2016/17

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMMES:

BACHELOR OF SCIENCE IN HORTICULTURE  
YEAR IV AND BACHELOR OF SCIENCE IN  
AGRONOMY YEAR IV

COURSE CODE:

HORT 403

TITLE OF PAPER:

PLANT BIOTECHNOLOGY

TIME ALLOWED:

TWO (2) HOURS

INSTRUCTION:

ANSWER ANY FOUR (4) QUESTIONS

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THE CHIEF INVIGILATOR

INSTRUCTION: ANSWER ANY FOUR (4) QUESTIONS.

Question 1

- (a) What are the essential requirements for using marker assisted selection (MAS) in plant breeding research? [5]
- (b) Why is the application of genetic engineering important in crop production? [5]
- (c) What are the technical limitations of genetic modification in crop production? [5]
- (d) Describe the characteristics that make plant cells suitable for tissue culture. [5]
- (e) Describe the properties of DNA vector. [5]

[25 marks]

Question 2

- (a) Discuss the Restriction Fragment Length Polymorphism (RFLP) analysis. [15]
- (b) What are the problems associated with this method? [10]

[25 marks]

Question 3

- (a) Describe the production of transgenic crops. [12]
- (b) What are the **merits** and **demerits** of such crops in Swaziland? [13]

[25 marks]

Question 4

- (a) Describe the steps involved in the selection and regeneration of transformed cells. [10]
- (b) Describe the regulatory process of the Institution Bio-safety Committee (IBC) for transgenic crops. [15]

[25 marks]

Question 5

- (a) Describe the process of micro-propagation in plants. [15]
- (b) What are the advantages of using plant tissue culture methods in plant propagation? [10]

[25 marks]