



1ST SEMESTER 2017/2018

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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

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY
THE CHIEF INVIGILATOR**

INSTRUCTION: ANSWER ANY FOUR (4) QUESTIONS.

Question 1

- (a) Describe 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) Describe restriction enzymes and name their types. [5]
 - (d) Describe the factors affecting plant tissue culture? [5]
 - (e) Discuss the characteristics that make plant cells suitable for tissue culture. [5]
- [25 marks]**

Question 2

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

Question 3

- (a) Describe the process of micro-propagation in plants. [15]
 - (b) Describe the advantages of using plant tissue culture methods? [10]
- [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 Biosafety Committee (IBC) for transgenic crops. [15]
- [25 marks]**

Question 5

Discuss the process and application of cryopreservation in germplasm storage

[25marks]