



UNIVERSITY OF EMBU

2016/2017 ACADEMIC YEAR

FIRST SEMESTER EXAMINATION

FIRST YEAR EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN
PLANT BREEDING AND BIOTECHNOLOGY

ACB 606: BREEDING FOR BIOTIC AND ABIOTIC STRESSES

DATE: DECEMBER 7, 2016

TIME: 2:00-4:00PM

INSTRUCTIONS:

Answer ANY FOUR Questions

QUESTION ONE (25 MARKS)

- a) Discuss the mechanisms of plant resistance to pests. (12 marks)
- b) Discuss why breeding for resistance to pests has not been popularly adopted. (8 marks)
- c) Suggest major gene deployment strategies that ensures the durability of resistance genes. (5 marks)

QUESTION TWO (25 MARKS)

- a) Discuss the selection methods when breeding for inducible resistance to insect pests. (10 marks)
- b) Briefly describe how genotyping using markers is performed. (5 marks)
- c) Discuss major gene deployment strategies aimed at ensuring the durability of resistance genes. (10 marks)

QUESTION THREE (25 MARKS)

- a) Outline the criteria for the development and use of screening tests for abiotic stress resistance (5 marks)
- b) Describe the mechanisms of drought resistance in plants (8 marks)
- c) Discuss the techniques that are used to screen plants for aluminium toxicity (12 marks)

QUESTION FOUR (25 MARKS)

Discuss the types of resistance to plant pathogens (25 marks)

QUESTION FIVE (25 MARKS)

- a) Describe the importance of pest resistant genotypes in pest management (5 marks)
- b) You have been given two major genes conferring resistance to stem rust. You are required to introgress the two genes into a susceptible wheat genotype. Describe how you would carry out the exercise using marker assisted selection technique. (14 marks)
- c) Describe the requirements for successful inoculation of a plant pathogen (6 marks)

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