

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF MASTER OF SCIENCE IN BOTANY
(PLANT PATHOLOGY)

BOTA 854: MOLECULAR PATHOLOGY

STREAMS: MSC (BOTA)

TIME: 3 HOURS

DAY/DATE: THURSDAY 06/04/2020

11.30 A.M. – 2.30 P.M.

INSTRUCTIONS:

- Answer any **THREE** questions
- Do not write anything on the question paper

QUESTION ONE (20 MARKS)

- (a) With illustration, explain the Guard hypothesis. [6 marks]
- (b) Discuss the different indirect model to support guard hypothesis. [10 marks]
- (c) Explain two examples of plant-pathogen interactions supporting guard hypothesis. [4 marks]

QUESTION TWO (20 MARKS)

Discuss the zigzag model for plant pathogen interaction.

QUESTION THREE (20 MARKS)

- (a) Describe the evolution of R genes. [10 marks]
- (b) In a maize, a resistant mutant gene (d_1) is located on chromosome 3. Another recessive resistant mutant gene (d_2) is located on chromosome 9.
- (i) What F_1 progeny would you expect if a homozygous d_1 plant is crossed with a homozygous d_2 plant? [2 marks]
- (ii) What progeny would be expected if the F_1 plant is selfed to obtain an F_2 generation? [4 marks]
- (iii) What progeny would be expected if the F_1 plant is crossed with a plant that is homozygous for d_1 and d_2 ? [4 marks]

QUESTION 4 (20 MARKS)

Discuss the gene discovery approaches.
