



MACHAKOS UNIVERSITY

University Examinations for 2024/2025 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

SBT 303: PRINCIPLES OF PLANT PATHOLOGY

DATE:

TIME:

INSTRUCTIONS:

Answer Question ONE and any other TWO

QUESTION ONE (30 MARKS)

a) Differentiate between the following terms as used in plant pathology

(i) Blight and leafspot (2 marks)

(ii) Mosaic and Mottle (2 marks)

(iii) Gall and canker (2 marks)

b) Describe the process in which a fungal spore actively gains entry into the plant cell (4 marks)

c) Explain cross protection as a method of plant disease management (4 marks)

d) Describe the process of asexual reproduction in bacteria (4 marks)

e) Explain two ways in which pathogens may exploit to suppress the plant defence mechanisms (4 marks)

f) Describe the process of differentiating between gram positive and gram negative bacteria (4 marks)

g) Explain four methods of transmission of plant viruses (4 marks)

QUESTION TWO (20 MARKS)

- a) Explain how the following factors affect plant disease epidemiology
 - i. Age of host (5 marks)
 - ii. Moisture (5 marks)
- b) With the aid of a diagram, describe the lifecycle of plant parasitic nematodes (10 marks)

QUESTION THREE (20 MARKS)

- a) With the aid of well labelled diagrams, describe the procedure of diagnosing a diseases using indirect ELISA (10 marks)
- b) Discuss late blight disease (*Phytophthora infestans*) under the following headings
 - i. Symptoms (5 marks)
 - ii. Transmission (5 marks)

QUESTION FOUR (20 MARKS)

- a) Explain four pre-existing chemical mechanisms used by a plant to defend itself against pathogens (8 marks)
- b) Explain six groups of fungicides based on general use (12 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss five ways pathogen use for invasion of host plant tissues (10 marks)
- b) Discuss five management practices in control of *Ralstonia solanacearum*, bacterial wilt of potatoes (10 marks)