



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

DECEMBER SESSION EXAMINATION FOR

BACHELOR OF EDUCATION SCIENCE

KST 302: PRINCIPLES OF PLANT PATHOLOGY

DATE: SCHOOLBASED

TIME :

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A: ANSWER ALL QUESTIONS (30 MARKS)

- a) Explain Koch's hypothesizes on diagnosis of a disease (3 marks)
- b) Outline three conditions necessary for plant infection to take place. (3 marks)
- c) *Rhizoctonia* and *Pythium* both cause damping-off of seedlings. On a microscopic level, how would you distinguish between these two pathogens? (3 marks)
- d) Explain how a farmer can control Fusarium wilt of tomatoes culturally. (2 marks)
- e) i) Highlight strategies utilized by plant nematodes in obtaining nutrients. (3 marks)
- ii) Outline the effect saliva secreted by nematodes on host cells (1 mark)
- f) How does *Hemileia vastatrix* and *Erwinia carotovola* gain entry into the host plant (3 marks)
- g) Bacteria can be used as pathogen control measure. Explain (3 marks)

- h) Chlamydozoospores and sclerotia pathogenic spores that survive adverse environmental conditions. Explain (3 marks)
- i) Explain why *Striga* spp weed is referred to as African cereal killer and state how it can be controlled. (3 marks)
- j) The photograph below shows symptom of a disease found in beans (*Phaseola vulgaris*). Identify the disease, its causative agent and a control measures of the diseases (3 marks).



SECTION B: ANSWER ANY TWO (2) QUESTIONS (TOTAL 40 MARKS)

QUESTION TWO (20 MARKS)

- a) As a plant pathologist, a farmer requests you to help him overcome a disease that has suddenly appeared in his Cassava fields which has yellowed the leaved and made the leaf blade narrow. Identify the disease, mode of transmission and suggest ways of controlling this disease pathogen (10 marks)
- b) Giving relevant examples in each case explain the modifications of parasitic plants to their habitat. (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss antagonistic biological mechanism useful for plant disease control. (10 marks)
- b) After completing your degree, you get internship as a farm manager tobacco firm. During you farm visits you find the leaves of tobacco have developed round yellow spots. After a few days the spots coalesce and become large irregular dead area. After close examination highlight the name of the disease and the scientific name of the causative pathogen and measures you would put in plant to control the disease (10 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the effects of pathogens on water and mineral salts transport in plants. (10 marks)
- b) Describe how plants use Chemicals to defend themselves against diseases. (10 marks)

QUESTION FIVE (20 MARKS)

Weather conditions have been linked to disease prevalence. Discuss.