"Investing in Africa's future"

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

NACP 304: PLANT PATHOLOGY

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL 2023

LECTURER: W. MANYANGARIRWA

DURATION: 3 HOURS

INSTRUCTIONS

1. Answer All Questions in Section A, and
2. Choose and Answer any two Questions in Section B.

SECTION A, ANSWER ALL QUESTIONS IN THIS SECTION

1.   a) Name the different types of microscopes that are used in the diagnosis of the following disease causing agents;
(i) fungal fruiting bodies, (ii) fungal spores, (iii) nematodes, (iv) bacterial cells, and, (v) virus particles.   [10]

b) Give a brief outline of the Koch's Postulates. Explain why it is not always possible to fulfil all the requirements of the postulates.   [10]

c) Describe briefly procedure that you used in the laboratory to isolate nematodes from a soil sample.   [10]

d) Outline the role played by Plant Quarantine in the management of plant diseases across national boundaries.   [10]

e) Briefly discuss the nematode species that affect tobacco and bananas.   [5]

f) A tomato farmer has brought to you some tomato plants that are wilting and yet the farmer has applied good irrigation to the crop. Describe a test that you would conduct in the lab to find the probable cause of the wilting.   [5]

SECTION B, ANSWER ANY TWO QUESTIONS

2.   Insects in the Order Hemiptera are the major vectors of plant viruses. With the aid of relevant examples, give a comparative analysis of the differences between persistent transmission of plant viruses and non-persistent transmission of plant viruses.   [25]

3.   Outline the measures enunciated by the Fungicide Resistance Action Committee (FRAC) to slow down the development of fungicide resistance in fungi.   [25]

4.   With reference to **three** named field crops that you have studied in detail, give a brief overview of the main diseases encountered and the disease control measures implemented.   [25]

5.   As a soyabean breeder you have been asked to evaluate the levels of soyabean rust resistance in six soyabean cultivars namely; Tarnby, Gentofte, Lyngby, Taarstrup, Luft and Valby. All the requirements for growing the crop are given i.e. *ceteris paribus* conditions.

a) How would you generate data on the area under disease progress curves to evaluate and rank the varieties for their resistance?   [16]

b) How would you determine the yield loss attributable to soyabean rust disease in the six cultivars? [9]

End of Examination Paper