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SEMESTER IV 2016/2017

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UNIVERSITY OF SWAZILAND

EXAMINATION PAPER

**PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY LEVEL 2, BACHELOR
OF SCIENCE IN AGRICULTURAL EDUCATION LEVEL 2, AND
BACHELOR OF SCIENCE IN HORTICULTURE LEVEL 2**

COURSE CODE: CPR206

TITLE OF PAPER: PLANT PATHOLOGY AND CROP DISEASE MANAGEMENT

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

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CHIEF INVIGILATOR**

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QUESTION 1

- a) Discuss the three fundamental elements required for disease development in plants. (9 Marks)
 - b) When isolating a pathogen from an infected plant, plant parts with a range of symptoms from early stages to late stages of disease should be used instead of completely dead plants. Explain this recommendation. (3 Marks)
 - c) What is the difference in the function between a nonhost-specific and a host-specific toxin in pathogenesis? (3 Marks)
 - d) Compare and contrast race-specific and general race-nonspecific resistance in plants. (10 Marks)
- [25 marks]

QUESTION 2

Explain how one can tell the difference between: (5 Marks)

- (a) Early and late leafspot on groundnuts (5 Marks)
 - (b) Early and late blight on tomatoes (5 Marks)
 - (c) Wilting of tomatoes caused by *Ralstonia solanacearum* and *Fusarium oxysporum lycopersi* (5 Marks)
 - (d) Rust and halo blight on beans (5 Marks)
 - (e) Smutted sugarcane and healthy sugarcane (5 Marks)
- [25 marks]

QUESTION 3

Describe a disease profile of a fungal disease on maize [25 marks]

QUESTION 4

Describe the properties of different types of plant viruses based on their transmission by aphids. [25 Marks]

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QUESTION 5

A Farmer who has a crop of tomatoes covering 5 hectares and green pepper covering 3 hectares has started noticing a problem with both his crops. The farmer benefitted from a canal that was constructed by the community to irrigate their crops. To irrigate, the farmer therefore, just diverts the water from the canal into his field where he uses furrow irrigation. Recently he started noticing that his crop is starting to wilt no matter how much water he applies the problem seems to become more and more serious. What is puzzling the farmer the most, is that all along his crop was healthy and even now the crop is not showing any sign of disease (ie no discoloration on the leaves and stems) except for the wilting. He first started noticing the problem during the hot part of the day but the plants would recover later in the day when it gets cool. However, of late the plants are no longer recovering instead more plants are showing the same symptoms. As the Plant Pathologist in the Ministry of Agriculture can you diagnose the disease and advise the farmer of what to do now and in the future.

- a. What do you think the problem is? (2 Marks)
 - b. How can you confirm your suspicion (5 Marks)
 - c. Describe symptoms of this particular disease (5 Marks)
 - d. What should the farmer do to this particular crop to limit the damage (4 Marks)
 - e. What should the farmer do in future to manage the disease? (6 Marks)
 - f. Can the farmer spray the crop with some pesticides, explain? (3 Marks)
- [25 Marks]**