



2ND SEMESTER 2010/2011

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**UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER**

PROGRAMME: **B.Sc. IN AGRICULTURAL EDUCATION YEAR 3**
 B.Sc. IN AGRONOMY YEAR 3
 B.Sc. IN HORTICULTURE YEAR 3

COURSE CODE: **CP 305**

TITLE OF PAPER: **CROP PHYSIOLOGY**

TIME ALLOWED: **TWO (2) HOURS**

INSTRUCTIONS: **ANSWER ANY FOUR QUESTIONS ALL QUESTIONS
CARRY EQUAL MARKS.**

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CHIEF INVIGILATOR**

QUESTION 1

Write an essay on seed dormancy.

[25 Marks]

QUESTION 2

- A. Define osmosis, osmotic pressure, and ideal semipermeable membrane. (5 marks)
- B. Describe the mass flow mechanism of phloem transport and supplement this description with the requisite details of anatomy and plant water potential. (5 marks)
- C. Water always flows from regions of (high or low?) water potential to regions of (high or low?) water potential. Briefly discuss. (5 marks)
- D. The movement of water in the environment and in plants is governed by three processes: bulk flow, diffusion, and osmosis. Define each of these processes. (5 marks)
- E. In a plant that is actively transpiring water, the water potential of the plant cells is (more or less negative?) than the water potential of the soil solution. Briefly discuss. (5 marks)

[25 Marks]

QUESTION 3

You need ripe bananas for use at a wedding party, but you found only unripe, mature bananas in the market. You have one week to spare. Explain what you would do to make the bananas ready for the party. What would be the major difference between your bananas and the ripe ones that you could have bought in the market?

[25 Marks]

QUESTION 4

- A. Phytochrome is a pigment responsible for a variety of photomorphogenic responses in plants. Describe the photochemical and biochemical properties of phytochrome. Include in your response such topics as nature of the protein, chromophore, conformational/chemical changes, regulation, localization in the plant. Also include a discussion of the three major phytochrome-mediated responses and provide an example of each. (15 marks)
- B. Describe the physiological strategies used by spring wildflowers to survive conditions in the spring. (10 marks)

[25 Marks]

QUESTION 5

Write an essay on the role of nitrogen, phosphorus, potassium, calcium and sulphur in plants.

[25 Marks]