

**2<sup>nd</sup> SEM.2010/2011**



**UNIVERSITY OF SWAZILAND  
FINAL EXAMINATION PAPER**

**PROGRAMME: BSC AGRIC. ECON. & AG. BMgt (2)**

**COURSE CODE: ABE 208**

**TITLE OF PAPER: POST-HARVEST TECHNOLOGY**

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

**SPECIAL MATERIAL REQUIRED:      CALCULATOR &  
PSYCHROMETRIC CHART**

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO  
OTHER QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR  
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## **SECTION ONE: COMPULSORY**

### **QUESTION ONE**

- (a) Discuss the fumigation practice of controlling insect pests that attack stored grain. Make particular reference to Swaziland and use the following subheadings to guide you in your presentation.
- a. Definition of fumigation (2 Marks)
  - b. Types of fumigants used (6 Marks)
  - c. Mode of fumigant operation and management (8 Marks)
  - d. Safety precautions and recommended fumigation guidelines for smallholder farmers in Swaziland. (4 marks)
- (b) Give a precise description of the oven method for measuring grain moisture content. In your description address the following aspects:
- a. The necessary equipment and tools you would require (4 Marks)
  - b. The procedure (10 Marks)
  - c. The equation (s) that you would use in your computations (4 Marks)
  - d. The precautions one should take to ensure operational safety and accuracy of results. (2 Marks)

## **SECTION II: ANSWER ANY TWO QUESTIONS**

### **QUESTION TWO**

- (a) Define the following terms used in post-harvest technology:

(i) Post harvest,

(ii) Maximum Residue Limit (MRL),

(iii) Physiological maturity,

(iv) LD<sub>50</sub>,

(v) Dehulling (10 Marks)

- (b) With the aid of a diagram, describe the physical structure and biochemical composition of a cereal grain of your choice. (12 Marks)

- (c) Briefly discuss two (2) physical and two (2) biological factors that can lead to losses of grain in the post-harvest pipeline for maize. (8 Marks).

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**QUESTION THREE**

(a) Giving examples of the most important species, describe how micro-organisms cause losses in food grain. **(10 Marks)**

(b) The hygrometer in a poultry house reads a dry-bulb temperature of 32 °C and a wet bulb temperature of 23 °C.

(i) Determine the psychrometric properties of the air –vapour mixture in the poultry house. **(10 Marks)**

(ii) Your duty as a poultry attendant is to regulate the temperature and relative humidity within the poultry house to prevent moisture condensation. Determine the fall in temperature that should occur before condensation occurs in the poultry house? Clearly indicate on the psychrometric chart provided how you reached your answer. **(10 Marks).**

*(Remember to attach the psychrometric chart to your answer book)*

**QUESTION FOUR**

(a) What are the critical parameters observed in the construction of a maize crib? **(10 Marks)**

(b) Why is it not advisable to store unshelled maize over a prolonged period in southern Africa? **(10 Marks)**

(c) Differentiate the following crop processing terminologies:

- (i) Drying and dehydration
- (ii) Absolute humidity and relative humidity
- (iii) Direct food loss and indirect food loss
- (iv) Food and feed
- (v) Dehulling and threshing

**(10 Marks)**



