



**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: BSC AGRIC. ECON., BSC AG.BMgt (3)

COURSE CODE: LUM 208 (New Programme)

TITLE OF PAPER: POST-HARVEST TECHNOLOGY

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

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

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN
GRANTED BY THE CHIEF INVIGILATOR**

SECTION ONE: COMPULSORY**QUESTION ONE**

(a) Define the following:

- (i) Post harvest,
- (ii) Post harvest losses
- (iii) Psychrometry,
- (iv) Food pipeline,
- (v) Dehulling

(10 Marks)

(b) A bin of grain is to be chilled with air at 100% RH, dry bulb temperature of 4.4°C and airflow rate of $1\,699\text{ m}^3/\text{hr}$. The ambient air conditions are 29.4°C (Tdb) and 21.1°C (Twb). Determine the amount of heat and moisture that has to be removed per hour from the inlet air by a grain chilling unit. (20 Marks)

(c) Describe how moisture is removed from a grain kernel during drying. (10 Marks)

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

(a) In an experiment, 20 millilitres of water is extracted from a 100 gram grain sample without destroying the grain structure. Calculate;

- (i) Dry basis moisture content of the grain (5 Marks)
- (ii) Wet basis moisture content of the grain (5 Marks)

(b) Give a full description of the oven-technique for determining the moisture content of food grain products. (20 Marks)

QUESTION THREE

- (a) Giving examples of the most important species, describe how micro-organisms cause losses in food grain. (10 Marks)
- (b) Discuss the factors that influence successful application of insecticides. (10 Marks)
- (c) Write short notes on insect metamorphosis? (10 Marks)

QUESTION FOUR

- (a) What are the critical parameters observed in the construction of a maize crib? (10 marks)
- (b) Give a description of a column type continuous flow dryer (10 Marks)
- (c) Define refrigeration. Briefly describe the operation of a vapour-compression refrigeration system. (10 Marks)