



**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: BSc AGRIC. 4 (CP), BSc HE 4 & BSc H EE 4

COURSE CODE: LUM 404

TITLE OF PAPER: POSTHARVEST TECHNOLOGY

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

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

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GRANTED BY THE CHIEF INVIGILATOR**

QUESTION ONE

- (A) There has been a debate in most developing countries regarding the importance of Post harvest Technology. What would be your contribution to this debate? (10 marks)
- (B) If a dealer in grains has reported that his grains were at a moisture content of 20%, what will be the scientific value?(10 marks)
- (C) What are the two main machines currently used in cotton harvesting? (10 marks)
- (D) With the aid of a neat flow diagram, give the sequence of operations in multistage sugar beet harvesting.(10 marks)

QUESTION TWO

- (A) State the drying equation (5 marks)
- (B) Give two uses of the drying equation (10 marks)
- (C) Give a schematic representation of the following dryers;
- i) Cross flow (5 marks)
 - ii) Counter flow (5 marks)
 - iii) Concurrent flow (5 marks)

QUESTION THREE

- (A) Indicate the drying process on the psychrometric chart provided.(5 marks)
- (B) If the dry and wet bulb temperatures of moist air are 35⁰ and 26⁰C respectively, find the other thermodynamics properties of air from the psychrometric chart. (10 marks)
- (C) What are the nature and principal causes of post-harvest losses? (10 marks)

(D) What measures would you take to control the menace of rats (rodents) infestation in stored grain) (5 marks)

QUESTION FOUR

(A) The particulars of a fan used in a post harvest machine are given below;

Airflow rate = $14 \text{ m}^3/\text{s}$

Total pressure head = 600 Pascal

Pressure loss/ $\text{m} = 11.4 \text{ Pascal}$

Specific volume of air = $0.883 \text{ m}^3/\text{kg}$

Efficiency of motor = 75%

Determine the power requirement of the fan. (10 marks)

(B) State the four main devices used in conveying agricultural materials over short distances. (4 marks)

(C) The Swaziland Government intends to build some warehouses and storehouses for grains. If you were to suggest the location and orientation of the buildings, what would you say? (10 marks)

(D) In most agricultural processing industries, electric motors are predominately used, what would you say is responsible for this? (6 marks)



PSYCHROMETRIC CHART

BASED ON A BAROMETRIC PRESSURE OF 1013.25 mbar

