

2<sup>nd</sup> SEM. 2016

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**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER  
2016**

**PROGRAMME: BSC. ABE**

**COURSE CODE: ABE 406**

**TITLE OF PAPER: CROP PROCESSING AND STORAGE**

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

**SPECIAL MATERIAL REQUIRED: CALCULATOR**

**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) Discuss why it is necessary to harvest crops. (5 Marks)
- (b) Explain why drying grains is considered a loss to a farmer. (5 Marks)
- (c) Discuss with the aid of examples five factors that have the most effect on seed viability and vigor. (10 Marks)
- (d) Name any five factors that have an effect on crop harvesting. Support how each factor is important. (10 Marks)
- (e) i) Calculate the moisture shrink when drying peanuts from 15 percent to 10 percent moisture content. (5 Marks)  
ii) if a farmer has harvested a 150 tonnes of peanuts at 15 percent moisture, what would be the weight after drying to 10 percent? (5 Marks)

**SECTION II: ANSWER ANY TWO QUESTIONS**

**QUESTION TWO**

- (a) State five advantages of processing agricultural products. Support each advantage by giving examples. (15 Marks)
- (b) Two samples of air both have a RH of 50%. The Tdb of one is 32 °C and the other is 38 °C.
  - (i) How much moisture does each sample contain? (5 Marks)
  - (ii) How much energy does each air contain? (5 Marks)
- (c) Grains are hygroscopic and have a low thermal conductivity. What is the implication of these characteristics in grain storage. (5 Marks)

**QUESTION THREE**

- (a) You are requested to design and construct a maize crib. State five design parameters you must take into consideration and why they are important. (10 Marks)
- (b) Discuss five factors that may contribute to farmers preferring a certain variety of seed. (10 Marks)
- (c) In most agricultural processing industries, electric motors are predominately used, what would you say is responsible for this? (6 Marks)
- (d) Why is high moisture content a problem in seed processing. (4 Marks)

**QUESTION FOUR**

- (a) Precisely describe the moisture movement mechanisms during grain drying. (10 Marks)
- (b) Describe the procedure for determining the throughput capacity of a hammer mill (10 Marks)
- (c) Modern crop production techniques such as use of hybrid seeds, application of chemical fertilisers, herbicides, improved tillage techniques, irrigation technology, pest and disease control etc., have contributed tremendously to higher crop yields. Whilst this is an acceptable development in terms of food security, these modern systems have brought with them a lot of challenges. Outline post-harvest related challenges that are faced by farmers who have adopted the new technologies. (10 Marks)

