



(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

FOURTH YEAR 2ND SEMESTER
MAIN EXAMINATION

**FOR THE DEGREE OF BACHELOR OF SCIENCE AGRICULTURE AND
BIOTECHNOLOGY**

COURSE CODE: SAB 416

COURSE TITLE: AGRICULTURAL PROCESSING AND FARM
STRUCTURES

DATE: 12TH OCTOBER 2021

TIME: 9 – 11 AM

INSTRUCTIONS TO CANDIDATES

Answer Question ONE and any other TWO Questions.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

QUESTION ONE = 30 MARKS (Compulsory)

- a) Briefly explain the three forms of heat transmission (6 Marks)
- b) Explain how heating and ventilation rate influences the design of the key farm structures below.(4 Marks)
 - i) Green House
 - ii) Poultry House
- c) Briefly explain the terms (4 marks).
 - i) Psychometry
 - ii) Psychometric Charts
- d) Briefly describe the main components of a mechanical air conditioning system in a farm structure (4 Marks).
- e) Using a diagram differentiate why the relative strength of lumber oriented with the shortest dimension parallel to the load (on its side) and the shortest dimension perpendicular to the load (on its edge). (6 Marks)
- f) What is the section modulus for a 2×4 standing on edge? (2 Marks)
- g) Highlight the key factors that influence the load that a beam can withstand. (4 Marks).

QUESTION TWO = 20 MARKS

- a) State the five main objectives of crop conditioning and storage. (5 Marks).
- b) Highlight the main advantages and disadvantages of grain storage in bags over bulk storage. (5 Marks).
- (c) Briefly explain the grain bulk storage techniques (5 Marks)
- (d) State the important objectives of the main bag storage management (5 Marks).

QUESTION THREE = 20 MARKS

Using a sketch representation, describe the physical properties used in a psychometric chart.

(20 Marks)

QUESTION FOUR = 20 MARKS

4. a) Describe the main methods used in handling cereal grains in bulk storage in Kenya highlighting the merit and demerits (12 marks).

b) Explain the expected trends in grain handling in Kenya in the next five years in relation to grain quality management during storage. (8 Marks).

QUESTION FIVE = 20 MARKS

5. a) Outline and explain the key factors considered in sizing a pneumatic conveyor system for milled maize (15 Marks)

c) Briefly explain the low utilization of pneumatic systems in Kenya (5 Marks).