20

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER
MAIN EXAMINATIONS

FOR THE DEGREE OF B.SC (BAB)

COURSE CODE: SAB 416

COURSE TITLE: AGRICULTURAL PROCESSING & FARM STRUCTURES

DATE: 31ST JULY 2018 **TIME: 9 – 11 AM**

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of **3** printed pages. Please Turn Over

QUESTION ONE – Compulsory (30 Marks)

a) Differentiate between farm building and agricultural building **(3 Marks)**

b) Discuss two categories of sources of building materials **(3 Marks)**

c) Explain why approval for building is necessary in Kenya **(4 Marks)**

d) State four reasons for processing horticultural produce **(4 Marks)**

e) Briefly discuss model type of estimates of construction materials **(2 Marks)**

f) Briefly explain the causes of agricultural crop losses at three different levels in the value chain **(8 Marks)**

g) Outline factors necessary for site selection for farmstead **(6 Marks)**

QUESTION TWO (20 Marks)

a) State and explain any four factors considered in selecting building materials. **(4 Marks)**

b) Use TOPSIS technique to select the best material from the information given below:

Table 1: Ratio scale

Performance of alternatives	**Importance of requirements/criteria**
5= Excellent, 4= Good, 3=satisfying, 2=Sufficient, 1=insufficient/poor	3=Major preference, 2=average preference, 1=Slight preference, 0=No preference

Table 2: Weighted matrix W (importance of requirements/criteria)

Criteria	**Cost**	**Aesthetics**	**Durability**	**Energy performance**
Weight/importance	3	2	2	3

Table 3: Decision matrix (performance of alternatives)

		Criteria			
		Cost	**Aesthetics**	**Durability**	**Energy performance**
Alternatives	Solar tile	5	4	4	5
	Concrete tile	4	5	4	5
	Clay tile	5	3	3	4

i) Construct a normalized decision matrix R **(3 Marks**

ii) Construct a normalized decision matrix V **(3 Marks)**

iii) Determine positive ideal and negative ideal solution sets (A^+ and A^-) **(3 Marks)**

iv) Calculate the separation measure i.e. the distance of each alternative from the positive and negative ideal solution sets **(3 Marks)**

v) Calculate the relative closeness to the ideal solution **(3 Marks)**

vi) Rank the alternatives in descending order and select the best alternative with the highest value **(1 Mark)**

QUESTION THREE (20 Marks)

a) State and explain any 3 benefits derivable from a farm building **(3 Marks)**

b) Describe design factors which must be considered in planning a building to obtain the greatest number of benefits at a reasonable cost,. **(5 Marks)**

c) Discuss load classification in farm structures **(6 Marks)**

d) With an aid of a sketch, explain how curtail wall foundation is constructed **(6 Marks)**

QUESTION FOUR (20 Marks)

a) Briefly discuss what is meant by food processing **(3 Marks)**

b) Differentiate primary processing from secondary processing **(3 Marks)**

c) Identify and explain six reasons for primary processing **(6 Marks)**

d) With an aid of a sketch, show the relationship wet-weight and dry-weight basis of moisture content **(8 Marks)**

QUESTION FIVE (20 Marks)

a) With the aid of a sketch, explain how sorption isotherm and adsorption isotherm are formed in relation to equivalent moisture content(EMC) **(10 Marks)**

b) With an aid of sketches, explain the concept of constant-rate drying period and falling-rate drying period **(10 Marks)**