

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN AGRICULTURAL EDUCATION

AGEN 341: FARM STRUCTURES

STREAMS: B.Sc AGED (SB)

TIME: 2 HOURS

DAY/DATE: THURSDAY 7/12/2017

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

- This paper contains seven Question
- Answer ALL Questions in Section A and any other TWO in Section B

SECTION A

QUESTION ONE

Discuss five factors that need to be considered when choosing material for a construction job.

[10 Marks]

QUESTION TWO

Define the following physical characteristics of wood:

- (i) Strength [2 Marks]
- (ii) Hardness [2 Marks]
- (iii) Warping [2 Marks]
- (iv) Natural decay resistance [2 Marks]
- (v) The workability [2 Marks]

QUESTION THREE

Discuss five advantages of earth as a building material.

[5 Marks]

QUESTION FOUR

List five main chemical components of standard Portland cement. [5 Marks]

QUESTION B

QUESTION FIVE

- (a) Name five desirable properties of concrete as a building construction material. [5 Marks]
- (b) Discuss the main functions of paint on painted surfaces. [3 Marks]
- (c) Describe the following types of building walls:
- (i) Masonry wall [2 Marks]
 - (ii) Monolithic wall [2 Marks]
 - (iii) Frame wall [2 Marks]
- (d) Discuss the importance of footings and foundations in building constructions. [3 Marks]
- (e) With the aid of a diagram, name the basic parts of a truss. [3 Marks]

QUESTION SIX

- (a) Describe the following types of roofs used in farm structures:
- (i) Hip roof [2 Marks]
 - (ii) Double-pitched (Gable) roof [2 Marks]
 - (iii) Monopitched roof [2 Marks]
 - (iv) Flat roof [2 Marks]
- (b) Discuss **FIVE** desirable characteristics for roof surfacing materials for pitched roofs. [5 Marks]
- (c) A farmer intends to construct a rectangular concrete floor 10 Metres by 5 Metres and 10 Centimetres thick. Use a nominal mix of 1:3:6. 50 kg of cement is equal to 37 litres.

Assumptions:

Decrease in volume when mixed	=30%
Waste	=5%
Density of Sand	=1400 Kg/M ³
Density of Ballast	=1600kg/m ³

- (i) Calculate the volume of materials needed to construct this floor in cubic meters. [5 Marks]
- (ii) Determine the weight of materials needed to construct this floor slab in tones. [2 Marks]

QUESTION SEVEN

- (a) (i) Discuss two main objectives of fencing on a farm. [4 Marks]
- (ii) Name four types of wire fences. [2 Marks]
- (b) Describe the following farm structures used in livestock management:

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- (i) Cattle rush [2 Marks]
- (ii) Cattle race [2 Marks]

(c) Discuss four factors to consider in farmstead planning. [4 Marks]

- (d) (i) Define a greeehouse as applied in crop production. [2 Marks]
- (ii) Name four design parameters in greenhouse construction. [4 Marks]

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