

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**FIRST YEAR EXAMINATION FOR THE AWARD OF  
CERTIFICATE IN ANIMAL HEALTH AND PRODUCTION**

**AGEN 00865: FARM STRUCTURES**

**STREAMS: CERT (ANHE) YIS2**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 13/04/2015**

**2.30 PM – 4.30 PM**

---

**INSTRUCTIONS:**

- **This paper contains seven questions**
- **Answer all questions in section A and any two questions in section B**
- **Shown in parenthesis are marks for each question**

**SECTION A**

**QUESTION ONE**

- (a) Discuss the importance of drawings for planning buildings. [5 marks]
- (b) Describe five defects to watch for when selecting timber for a construction job. [5 marks]

**QUESTION TWO**

- (a) Explain the following characteristics of wood as a building material:
- (i) Strength [2 marks]
  - (ii) Hardness [2 marks]
  - (iii) Warping [2 marks]
- (b) Describe four desirable properties associated with concrete as a building material. [4 marks]

### QUESTION THREE

- (a) Discuss five advantages of galvanized steel sheets as a building material [5 marks]
- (b) Describe briefly the following structure for livestock management on the farm
- (i) Cattle race [2 ½ marks]
  - (ii) Cattle crash [2 ½ marks]

### QUESTION FOUR

- (a) Discuss five advantages and three disadvantages of earth (soil) used as a building material. [8 marks]
- (b) (i) Explain the term “footing” as used in building construction [2 marks]
- (ii) With the aid of diagrams show the footing proportions for walls and piers, and four columns. [3 marks]
- (c) Explain four objectives of fencing on a farm. [2 marks]

### SECTION B

#### QUESTION FIVE

- (a) Differentiate between the following terms as used in farm structures.
- (i) Column and beam [2 marks]
  - (ii) Live load and dead load [2 marks]
  - (iii) Tensile strength and compressive strength. [2 marks]
- (b) Draw and label the basic parts of a goat pen [9 marks]

#### QUESTION SIX

- (a) Draw and label the basic parts of a dairy zero grazing unit to accommodate four cows and indicate the measurements. [8 marks]
- (b) A brick pier is 0.7 metres square and 3 metres high and weights  $19\text{kN/M}^3$ . It is supporting an axial load from a column of 490 KN. The load is spread uniformly over the top of the pier, so that the arrow shown in the diagram below merely represents the resultant of the load.

Calculate:

- (i) The stress in the brick work immediately under the column [2 marks]
- (ii) The stress at the bottom of the pier. [5 marks]

### QUESTION SEVEN

- (a) Draw a structural framework of a truss with eleven members. Indicate on the truss the members subjected to compression load (stress) and the members subjected to tensile loads (stress) [7 marks]
  - (b) State any four (4) types of housing systems for layers. [4 marks]
  - (c) State four (4) characteristics of a zero grazing unit. [4 marks]
-