KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

(ANIMAL HEALTH AND PRODUCTION)

KAS 208: FARM STRUCTURES AND MECHANANIZATION

2ND SEMESTER 2020/2021 TIME: 2 HOURS

INSTRUCTIONS: Answer ALL Questions in **SECTION A** and **Any** other **TWO** Questions in **SECTION B**

SECTION A (40 MARKS) ANSWER ALL THE QUESTIONS

1. State methods of hitching a tractor implement **(6 Marks)**
2. Explain the importance of slump testing in wet concrete mix. **(4 Marks)**
3. State five factors affecting the choice of materials in a farm construction job **(5 Marks)**
4. Demonstrate with diagrams, differences between isometric and oblique projections. **(6 Marks)**
5. A plough has a 30 cm wide furrow at the top and 15 cm depth. Calculate the volume of soil handled per day 8 hours if the speed of working is 2.5 km/h. **(6 Marks)**
6. Differentiate between particle density and bulky density. **(8 Marks)**
7. State methods of preserving and protecting steel from rusting. **(5 Marks)**

SECTION B (30 MARKS) ANSWER ANY TWO QUESTIONS.

8. (a) Show by a diagram zones applied in farmstead planning and indicate a reasonable activity in each zone. **(4 Marks)**
   (b). Draw a structural framework of truss and label eight members. **(8 Marks)**
   (c) State steps applied in comprehensive economic planning. **(3 Marks)**

9. (a) State five practices of tractor maintenance applied after working for 50 hours. **(5 Marks)**

(b) State factors that guide the selection of tractors for any job. **(7 Marks)**

(c) A 3x30cm plough is moving at a speed of 4km/h, calculate how much time it took to plough 500x500m field when the field efficiency is 70%. **(3 Marks)**

10. (a) State tendering methods employed in farm projects. (3 Marks)

(b) A 20cm by 10m by 80mm floor slab of a milking parlour unit is to be constructed. The work is expected to take 4 days being done by 2 Masons and 4 Casuals whose rate per day is Kshs.1000 and Kshs.500 respectively. The slab is to be made of concrete with a nominal mix ratio of 1:3:6 by volume. Taking the assumptions listed below; calculate (a) Water/cement ratio, (b) Aggregate/cement ration and (c) Bill of Quantities for the slab assuming other costs not provided were entered for by the County Government.

(i) Shrinkage and waste allowance of 20% and 5% respectively.

(ii) Moisture content of sand 3%

(iii) Moisture content of ballast 2%

(iv) Litres of water added 80

(v) Density of water, sand and ballast is $1000kgm^{-3}$ $1400kgm^{-3}$ and $1600kgm^{-3}$ respectively.

(vi) 50 kg of cement is equivalent to 37 litres

(vii) 1 bag of cement, 1 ton of sand, 1 ton of ballast and $1m^3$ of water costs kshs.800, 2000, 4000 and 1500 respectively. **(12 Marks)**