UNIVERSITY OF FORT HARE
FACULTY OF SCIENCE AND AGRICULTURE

PRINCIPLES OF CROP PRODUCTION AGC 222

SUPPLEMENTARY EXAM

FEBRUARY

2019

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Time: **3 HOURS**

Subject: **AGC222**

Marks: **100 MARKS**

This paper consists of Two pages including the cover page

Examiner(s)
Dr. ST Hadebe

INSTRUCTIONS

1. This paper consists of TWO pages including the cover page.
2. There are SEVEN questions, answer ALL.
3. Write all answers in the answer book.
4. Number all answers correctly.

QUESTION 1 [10 Marks]

1.1. Mention and discuss three effects low planting density in crops. (10)

QUESTION 2 [20 Marks]

2.1. Assume a field is planted to wheat. When counting, there were 101 plants within a 20 m row; and 11 rows within a 7.5 m distance. Calculate the plant population.

2.1.1. Estimate the area occupied by one plant in m^2. (9)

2.1.2 Estimate the plant population in plants per hectare. (5)

2.2. Given the above planting density (from question 2.1), and assuming that the optimum planting density for grain wheat is 100 000 plants per hectare.

2.2.1. Explain what happens to wheat grain yield (e.g. higher, lower, same) as a result of being planted at the calculated density compared to the optimum. (1)

2.2.2. Explain how wheat would use plastic responses to achieve optimum yields despite being planted at the calculated density (5)

QUESTION 3 [20 Marks]

3.1 Mention four disadvantages of conventional tillage practices. Give a brief description of how each disadvantage develops/ occurs. (12)

3.3. Explain how primary tillage differs from secondary tillage. (8)

QUESTION 4 [10 Marks]

4.1. What are fiber crops? (1)

4.2. There are three (3) types of fiber crops;

- List all three, (3)
- Which part of the plants each is sourced from (3)
- And, give one example of a plant that produces each (3)

QUESTION 5 [20 Marks]

5.1. Mention nine benefits (direct and indirect) of crop rotations (18)

5.2. Give a definition of crop rotation (2)

QUESTION 6 [9 Marks]

6.1. A 25 kg bag of N-P-K fertilizer with an analysis of **3.1.3** (42) is broadcasted over an area of 9 ha. Calculate rate of nitrogen application in kg/ha.

6.1.1. Ratio of Nitrogen per 100 g of fertilizer (3)

6.1.2. Total Potassium mass in the bag, in kg. (3)

6.1.3. Rate of Nitrogen application, in kg/ha (3)

QUESTION 7 [11 Marks]

7.1. Discuss factors that lower the productivity of soil under ordinary conditions of continuous cropping lowers. (6)

7.2. Discuss three difficulties and limitations of crop rotations. (5)