

**UNIVERSITY OF FORT HARE**

**INTRODUCTION TO CROP SCIENCE  
AGC 121**

**DEGREE EXAMINATIONS**

**NOVEMBER**

**2016**

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**Time: 3 HOURS**

**Subject: AGC 121**

**Marks: 100**

**This paper consists of FIVE (5) pages including  
the cover page**

**Internal Examiners**

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**INSTRUCTIONS**

**ANSWER ALL THE QUESTIONS**

### QUESTION 1 [10]

- 1.1 What is the effect of natural selection and artificial selection on the creation of biological systems? (2)
- 1.2 What term would you use for the taking of plant from its natural environment and growing it somewhere else? (1)
- 1.3 What was the name of the Russian geneticist who researched into the origin of cultivated plants? (1)
- 1.4 How would you classify a plant that does not lose its leaves in winter? (1)
- 1.5 How would you classify a woody plant that lacks a self-supporting stem? (1)
- 1.6 What do a liana and a vine have in common? How are they different? (3)
- 1.7 A crop that is grown to be ploughed back into the soil to improve soil fertility is classified as a soilage crop. Is this statement true/false? (1)

### QUESTION 2 [20]

- 2.1 What is a bud? (2)
- 2.2 What are the **TWO** basic parts of a monocot leaf and where are they connected to each other? (3)
- 2.3 How do "petioles" differ from "petiolules"? (4)
- 2.4 Where are "terminal", "auxiliary" and "adventitious" buds found? (3)
- 2.5 What is a tendril and what does it do? (3)
- 2.6 What is the difference between an imperfect and a perfect flower? (4)
- 2.7 Kiwi fruit produces separate male and female plants. What term would you use to describe it? (1)

**QUESTION 3 [20]**

- 3.1 Describe **TWO** functions of roots. (2)
- 3.2 Describe **TWO** functions of stem. (2)
- 3.3 A maize field yields 3500 kg grain and 6000 kg/ha stover on dry matter basis. Calculate the harvest index. (3)
- 3.4 Define seed dormancy. How does dormancy assist in the survival of certain wild plants? (3)
- 3.5 The seed of a wild plant species (*Stachitaphyta indica*) failed to germinate even though all the necessary conditions required for germination were provided. Give **ANY FIVE** methods you would use to induce the seed to germinate and give a reasons/type of dormancy for using each method. (10)

METHOD	REASON/TYPE OF DORMANCY
1.	
2.	
3.	
4.	
5.	
6.	
7.	

#### **QUESTION 4 [20]**

- 4.1 List **TWO** physical properties of soil that are improved by Organic Matter. (2)
- 4.2 List **TWO** ways in which the following nutrient elements can be lost from the soil. (10)
- i) Boron
  - ii) Phosphorus
  - iii) Iron
  - iv) Nitrogen
  - v) Magnesium
- 4.3 Give **TWO** morphological characteristics that are of high importance when determining the plant density of the crop. (2)
- 4.4 Give **THREE** reasons for vegetative propagation. (6)

#### **QUESTION 5 [30]**

- 5.1 A farmer intends to plant forage maize in his 3ha land for his livestock herd and requires the services of an agronomist to help him with some aspects of calculation to realize his planning process. Determine the following Aspects:
- i) The total number of plants in his field (if the inter-row spacing and intra-row spacing are 0.6m and 0.35m respectively). (5)
  - ii) The dry matter yield if the single plant has a fresh weight of 3.5 kg and contains 40% water. (10)
  - iii) The amount of Potassium that he will have to apply to the land for the next season due to depletion by the harvested crop. (5)

5.2 Define the following terms:

(10)

- i) Symbiosis
- ii) Humus
- iii) Interspecific competition
- iv) Polyembryony
- v) Allelopathy

