



**GWANDA STATE UNIVERSITY**  
**FACULTY OF NATURAL RESOURCES MANAGEMENT & AGRICULTURE**  
**DEPARTMENT OF HORTICULTURE & CROP PRODUCTION**  
**BSc (HONOURS) IN HORTICULTURE AND CROP PRODUCTION/BSc**  
**(HONOURS) IN AGRICULTURAL ECONOMICS**  
**NHC2103 & LCS 2108 PRINCIPLES OF CROP PRODUCTION**  
**FINAL EXAMINATION PAPER**  
**SEPTEMBER 2024**

This examination paper consists of 3 pages, inclusive of cover page

**Time Allowed:** 3 hours  
**Total Marks:** 100  
**Examiner's Name:** MR N MATHEMA

**INSTRUCTIONS**

1. Answer **ALL** questions in Section A
2. Answer **THREE** questions in Section B

**MARK ALLOCATION**

QUESTION	MARKS
SECTION A	40
SECTION B	60
<b>TOTAL ATTAINABLE MARKS</b>	<b>100</b>

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**SECTION A: ANSWER ALL QUESTIONS**

**[40 MARKS]**

**QUESTION 1**

- a. Define plant taxonomy [2]
- b. Outline the meaning and the significance of the following practices of crop production:
  - i. Scouting for pests and diseases in crops [2]
  - ii. Soil testing [2]
  - iii. Mulching [2]
  - iv. Trellising [2]
  - v. Seedling hardening [2]
  - vi. Ridging in potatoes and tobacco [4]
- c. Outline the meaning and benefits of the following practices in crop production:
  - i. Zero tillage [3]
  - ii. Crop rotation [3]
  - iii. Split nitrogen top-dressing in maize production on sandy soils [2]

**Question 2.**

- a) Demonstrate your knowledge of herbicide mode of action when controlling weeds under the following headings:
  - i. Pigment inhibitor herbicides [3]
  - ii. Growth regulator herbicides [3]
  - iii. Seedling-growth inhibitor herbicides [3]
  - iv. Cell division inhibitor herbicides [3]
- b) State the principles of conservation tillage [4]

**SECTION B ANSWER ANY THREE QUESTIONS.**

**Question 3**

- a) Citing suitable examples, outline any five (5) factors that affect fertilizer use and efficiency. [15]
- b) It has been recommended that a farmer apply 80kg of nitrogen and 40kg of phosphate per hectare to the field. How much of ammonium nitrate and triple superphosphate should be applied to achieve the recommended rate? [5]

#### Question 4

- a) Land preparation and sowing of Irish potato differs from that of Sweet potato, defend this statement under the following headings.
- i. Soil preparation [5]
  - ii. Planting [5]
- b) Justify why it is important to consider the soil physical, biological and chemical composition before embarking on crop production in a piece of land. [5]
- c) A farmer has two soil types on his land, a sand soil and a clay soil type. Recommend the appropriate irrigation system for each soil type and justify your answer [5]

#### Question 5

Examine the adverse effects of frequent deep tillage on the soil and the environment under following headings;

- a) Soil Structure Degradation [5]
- b) Nutrient Loss [5]
- c) Disruption of Soil Biology and Biodiversity Loss [5]
- d) Increased Soil Moisture Loss [2]
- e) Climate Impacts [3]

#### Question 6

- a) Examine the role of the following major plant nutrients in physiology, plant growth and development:
- i. Magnesium [7]
  - ii. Calcium [5]
  - iii. Sulphur [4]
- b) Outline the factors that are considered in designing a crop rotation sequence [4]

#### Question 7

Describe seed dormancy and discuss methods that are used to break seed dormancy [20]

**END OF EXAMINATION**