

**GWANDA STATE UNIVERSITY**



**FACULTY OF NATURAL RESOURCES & AGRICULTURE**

**DEPARTMENT OF CROP SCIENCE**

**BACHELOR OF SCIENCE (HONOURS) DEGREE IN CROP SCIENCE**

**LCS 2206 AGRONOMY OF ANNUAL CROPS**

**FINAL EXAMINATION PAPER**

**JUNE 2023**

This examination paper consists of 3 pages.

**Time Allowed:** 3 hours.

**Total Marks:** 100

**Special Requirements:** None

**Examiner's Name:** Mathema N

**INSTRUCTIONS**

1. Answer **FIVE (5)** questions
2. Each question carries 20 marks.

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### Question 1

Zimbabwean farmers are known to produce low maize yields. Recommend the good agronomic practices that farmers can follow to come up with high yields. You may use the following headings.

- a) Soil conditioning /correcting pH [2]
- b) Land preparation [2]
- c) Choice of Variety [2]
- d) Plant population and even stand [2]
- e) Available phosphorus [1]
- f) Time of planting [2]
- g) Weed and pest control [2]
- h) Soil Organic Matter (SOM) build up [2]
- i) Moisture management [2]
- j) Address soil fertility issues [2]
- k) Crop rotations [1]

[1]

### Question 2

i) To attain optimum yields in ground nut production, farmers must pay attention to certain agronomic practices. Using the following headings, describe what the farmer is supposed to do to achieve the desired plant population.

- a) Time of planting [2]
- b) Planting methods and sowing depth [3]
- c) Population density/Plant population [4]

ii) Recommend the fertilizers that a farmer can use when growing ground nuts, and indicate the nitrogen, phosphorus, and potassium ratios of the given fertilizers [3]

iii) Outline the physiological considerations that the farmer must make during the production of ground nuts from sowing to storage of grain under the following headings.

- a. Crop emergence [2]
- b. Pegging [2]
- c. Readiness for harvest of groundnuts [2]
- d. Losses during harvesting [2]

### Question 3

Put into perspective the activities which will guarantee early growth, establishment, and optimum growth in a wheat crop under the following headings.

- i. Land preparation [2]

- ii. Fertilizers application [3]
- iii. Sowing [5]
- iv. Irrigation [4]
- v. Hardening the crop [3]
- vi. Crown root development [3]

#### Question 4

Outline Sweet potatoes *Ipomoea batatas* agronomy using the following sub-headings.

- a) Product uses [3]
- b) Land preparation [1]
- c) Source of planting material [3]
- d) Soils and climate [3]
- e) Fertilizer requirements [2]
- f) Variety choice [2]
- g) Weed management [3]
- h) Pest & disease management [1]
- i) Harvesting and post-harvest management [2]

#### Question 5

- a) Fall army worm pest has caused havoc in cereal crop production, suggest ways of effectively and efficiently managing the pest [10]
- b) “Excessive liming prior to growing Irish potatoes *Solanum tuberosum* might lead to losses”. Defend this statement using suitable examples. [10]

#### Question 6

“A Zimbabwean farmer with only \$50 USD and a small piece of land can guarantee food security for a family of six for one calendar year”. Defend this statement in support of the Conservation agriculture/Intwasa/Pfumvudza maize production concept using the following sub-headings.

- a) Pegging/marketing of rows and planting stations [2]
- b) Digging the holes [2]

- c) Fertilizer application [4]
- d) Planting [4]
- e) Weeds [4]
- f) Thinning [2]
- g) Top dressing [1]
- h) Fall army worm and stalk borer management [1]

**Question 7**

Classify the following crops listed on the table according to the criteria given on the columns

[20]

	<b>Root system</b> Shallow/deep, fibrous or tap root	<b>Plant type;</b> monocotyledon or Dicotyledon	<b>Scientific name</b>	<b>Family</b>
Example: Maize	Shallow rooted, Fibrous root system	Monocotyledon	<i>Zea mays</i>	<i>Poaceae or Gramineae</i>
Irish potato				
Sesame				
Sorghum				
Sweet potato				
Cow peas				
Wheat				
Bambara nuts				