

2910/103  
CROP ENTERPRISE MANAGEMENT I AND  
FOUNDATIONS OF SUSTAINABLE AGRICULTURE  
Oct./Nov. 2022  
Time: 3 hours



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**  
**DIPLOMA IN SUSTAINABLE AGRICULTURE**  
**AND RURAL DEVELOPMENT**

**MODULE I**

**CROP ENTERPRISE MANAGEMENT I AND FOUNDATIONS OF  
SUSTAINABLE AGRICULTURE**

**3 hours**

**INSTRUCTIONS TO CANDIDATES**

*You should have the following for this examination:*

*Non-programmable scientific calculator;*

*Answer booklet.*

*This paper consists of EIGHT questions in TWO sections: A and B.*

*Answer a total of FIVE questions taking TWO questions from section A, TWO questions from section B and ONE question from either section A or B.*

*All questions carry equal marks.*

*Maximum marks for each part of a question are indicated.*

*Candidates should answer the questions in English.*

**This question paper consists of 4 printed pages.**

**Candidates should check the question paper to ascertain that  
all the pages are printed as indicated and that no questions are missing.**

## SECTION A: CROP ENTERPRISE MANAGEMENT I

Answer at least TWO questions from this section.

1. (a) Highlight five factors used in determination of agro-ecological zones. (5 marks)
- (b) Classify coffee, maize, rice, tobacco, wheat, beans, soya beans, cotton, cassava and chrysanthemums into:
- (i) short day plants;
  - (ii) long day plants;
  - (iii) day neutral plants. (5 marks)
- (c) Explain five causes of soil acidity. (10 marks)
2. (a) State five problems affecting crop production in Kenya. (5 marks)
- (b) Explain the effects of conservation tillage. (7 marks)
- (c) (i) Distinguish relay planting from phased planting.
- (ii) Highlight four advantages of phased planting. (8 marks)
3. (a) Beans are planted at a spacing of 40 cm by 20 cm with two seeds being placed in one hole. Given that 100 seeds weigh 35 g, determine the seed rate in kg/ha. (6 marks)
- (b) Identify the planting materials for the following crops:
- (i) pineapples; - split slip corm & sucker
  - (ii) coffee;
  - (iii) pyrethrum; split
  - (iv) sisal. - sucker & barbell (7 marks)
- (c) (i) Differentiate between thinning and pricking out.
- (ii) Highlight three characteristics of vegetables established through direct sowing. (7 marks)
4. (a) State four benefits of sun drying grains. (4 marks)

- (b) Figure 1 shows an illustration of push and pull technology.

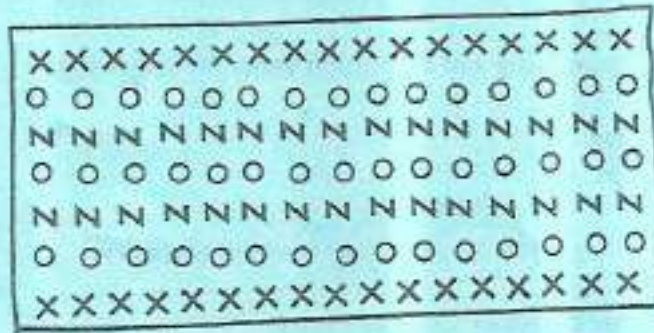


Fig. 1

NOTE: Letters X, O and N denote the crops planted in the plot.

- (i) Identify the crops denoted by the letters X, O and N.
- (ii) Identify two pests that are controlled by the technology. pesticides the traps (8 marks)
- (iii) Explain the technology.
- (c) Describe emasculation under the following:
- (i) meaning;
- (ii) methods. (8 marks)

**SECTION B: FOUNDATIONS OF SUSTAINABLE AGRICULTURE**

*Answer at least TWO questions from this section.*

5. (a) Describe monitoring and evaluation under the following:
- (i) meaning;
  - (ii) steps. (8 marks)
- (b) Describe integration of enterprises in entomoforestry. (12 marks)
6. (a) Explain four causes of food insecurity. (8 marks)  
*poverty, conflict, drought, lack of infrastructure*
- (b) Describe practices used in sustainable agriculture. (12 marks)  
*crop rotation, use of mineral fertilizers, cover cropping, Ecological pest management, mulching*
7. (a) Outline the steps involved in chemical treatment of water. (5 marks)  
*filtration of water, flocculation, coagulation*
- (b) Highlight eight properties of clay soils. (8 marks)
- (c) Highlight seven goals of appropriate technology. (7 marks)
8. (a) Highlight six factors that affect the environment. (6 marks)
- (b) Explain four principles of organic agriculture. (8 marks)
- (c) Highlight six factors that influence selection of a farming system. (6 marks)

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