

**THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
ADVANCED CERTIFICATE OF SECONDARY EDUCATION  
EXAMINATION**

**134/1                      SCIENCE AND PRACTICE OF AGRICULTURE 1**

(For Both School and Private Candidates)

**Time 2:30 Hours**

**Year: 2000**

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**Instructions**

1. This paper consists of **ten (10)** questions in sections A, B and C.
2. Answer **five (5)** questions choosing at least **one (1)** question from each section.
3. Each question carries **twenty (20)** marks.
4. Cellura phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).



## **SECTION A**

### **AGRICULTURAL ENGINEERING AND LAND PLANNING**

1. (a) Describe the construction of a mouldboard plough.  
(b) Explain the function of the following parts of a mouldboard plough:
  - (i) Share
  - (ii) Landside
  - (iii) Frog
  - (iv) Mouldboard(c) State two conditions under which a mouldboard plough performs poorly.
  
2. (a) Explain the meaning of land surveying as used in agriculture.  
(b) Describe the use of each of the following surveying instruments:
  - (i) Ranging rods
  - (ii) Pegs
  - (iii) Measuring tape(c) State two limitations of chain surveying on large farms.
  
3. (a) Distinguish between primary tillage and secondary tillage.  
(b) Name two implements used in each type of tillage.  
(c) Explain one function of each implement named in (b).

4. (a) Explain the working principle of a knapsack sprayer.
- (b) State four faults that may occur during its operation.
- (c) Explain one remedy for each fault stated in (b).
5. (a) A farmer uses a knapsack sprayer calibrated to deliver 600 litres per hectare.
- (i) Calculate the amount of spray mixture required to cover 0.75 hectares.
- (ii) If the sprayer tank capacity is 15 litres, calculate the number of refills required.
- (b) State two advantages of proper sprayer calibration.

## **SECTION B**

### **SOIL SCIENCE**

6. (a) Define soil formation.
- (b) Explain the role of each of the following factors in soil formation:
- (i) Parent material
- (ii) Climate
- (iii) Living organisms
- (iv) Time
7. (a) Explain the term soil texture.
- (b) Describe the soil textural classes using the soil textural triangle.
- (c) State two agricultural limitations of sandy soils.

8. (a) Define soil organic matter.
- (b) Explain four functions of soil organic matter in crop production.
- (c) State two sources of organic matter added to agricultural soils.

## **SECTION C**

### **RURAL ECONOMY**

9. (a) Explain the meaning of gross margin as used in farm management.
- (b) A farmer planted 3 hectares of beans. The following costs were incurred:

Seeds Tshs 45,000

Fertilizers Tshs 90,000

Pesticides Tshs 30,000

Labour Tshs 120,000

The total yield was 2,400 kg sold at Tshs 1,200 per kg.

- (i) Calculate total revenue.
- (ii) Calculate total variable costs.
- (iii) Calculate gross margin.
- (iv) Determine the gross margin per hectare.
- (c) State two uses of gross margin analysis to farmers.

- 10.(a) Explain the meaning of agricultural marketing.

- (b) Describe four functions of agricultural marketing.

- (c) Explain four problems faced by farmers in marketing agricultural produce.
- (d) State two measures that can be taken to improve agricultural marketing efficiency.