

**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: 2007**

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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. Cellula 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 differences between a disc plough and a disc harrow.  
(b) (i) State when a farmer would choose a disc plough over a mouldboard plough.  
(ii) Explain the function of the scraper on a disc.
2. (a) A pulley with a diameter of 20 centimetres drives another pulley with a diameter of 10 centimetres. If the drive pulley rotates at 1,000 revolutions per minute, calculate the speed of the driven pulley.  
(b) Define velocity ratio.
3. (a) State the safety rules to be observed when using a forge in a workshop.  
(b) (i) Name two tools used in forging.  
(ii) Describe the process of tempering steel.
4. (a) Define the term scale as used in surveying.  
(b) (i) Convert a scale of 1:5,000 into a statement scale.  
(ii) If a distance on a map is 10 centimetres, calculate the actual ground distance in kilometres.
5. (a) Explain the maintenance procedures for a knapsack sprayer.  
(b) Discuss the importance of calibration before using a sprayer.

## **SECTION B**

### **SOIL SCIENCE**

6. (a) Explain the USDA system of soil classification.
- (b) (i) Define a soil order.  
        (ii) Name two soil orders found in tropical regions.
7. (a) Describe the procedure for taking a representative soil sample from a field.  
    (b) (i) State the tools used for soil sampling.  
        (ii) Explain why soil samples should not be taken near fence lines.
8. (a) Define soil salinity.  
    (b) (i) Explain how irrigation can lead to soil salinity.  
        (ii) Describe the method of leaching used to reclaim saline soils.

## **SECTION C**

### **RURAL ECONOMY**

9. (a) Define risk and uncertainty in farming.  
    (b) (i) List three types of risks faced by farmers.  
        (ii) Distinguish between risk and uncertainty.  
    (c) Describe three strategies used by farmers to reduce risk.  
    (d) Discuss the role of agricultural insurance in protecting farmers.
10. (a) Define gross margin.  
    (b) (i) Distinguish between gross margin and net profit.

(ii) State the formula for calculating gross margin.

(c) A farmer keeps 500 layers. Each bird produces 280 eggs per year. The price of one egg is Tshs 300 and the variable cost per bird per year is Tshs 40,000. Calculate the total gross margin for the enterprise.

(d) Discuss how gross margin analysis can be used to choose between two competing farm enterprises.