

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: 2002**

**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 construction of a disc plough.  
(b) Explain how a disc plough operates during tillage.  
(c) State two advantages of disc ploughs over mouldboard ploughs.
  
2. (a) Explain the importance of land levelling in irrigated agriculture.  
(b) Describe two methods used in farm land levelling.  
(c) State two limitations of poor land levelling.
  
3. (a) Explain the working principle of a grain thresher.  
(b) State four safety precautions to observe when operating a grain thresher.  
(c) Explain two maintenance practices for a grain thresher.
  
4. (a) Define farm mechanization.  
(b) Explain four benefits of farm mechanization.  
(c) State two challenges of farm mechanization in developing countries.
  
5. (a) A tractor travels 600 m in 12 minutes.  
(i) Calculate its speed in m per minute.  
(ii) Calculate its speed in km per hour.  
(b) State two factors that affect tractor field efficiency.

## **SECTION B**

### **SOIL SCIENCE**

6. (a) Define soil structure.  
(b) Describe four types of soil structure found in cultivated soils.  
(c) State two effects of soil structure on root development.
7. (a) Explain the term soil moisture.  
(b) Describe the following forms of soil moisture:  
(i) Gravitational water  
(ii) Capillary water  
(iii) Hygroscopic water
8. (a) Define soil fertility.  
(b) Explain four factors that influence soil fertility.  
(c) State two indicators of fertile soil.

## **SECTION C**

### **RURAL ECONOMY**

9. (a) Explain the meaning of fixed costs and variable costs.  
(b) A dairy farmer incurs the following annual costs:  
Feeds Tshs 1,200,000  
Veterinary services Tshs 300,000  
Labour Tshs 900,000  
Depreciation Tshs 500,000  
Milk sales amount to Tshs 4,200,000.  
(i) Identify total variable costs.  
(ii) Identify total fixed costs.

(iii) Calculate total cost.

(iv) Calculate net farm income.

(c) State two uses of net farm income.

10.(a) Explain the concept of agricultural credit.

(b) Describe four sources of agricultural credit.

(c) Explain four problems associated with agricultural credit.

(d) State two ways of improving access to agricultural credit for smallholder farmers.