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: 2001**

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 working principles of a four-stroke cycle diesel engine.

   (b) (i) Explain the function of the fuel injector.

   (ii) Explain the role of the glow plug.

2. (a) A tractor pulls a three-furrow plough at a speed of 6 km per hour. The width of

   each furrow is 0.4 m. Calculate the theoretical field capacity in hectares per hour.

   (b) If the field efficiency is 75 percent, calculate the actual field capacity.

3. (a) Name four types of wood saws used in a workshop.

   (b) (i) Describe the use of a cross-cut saw.

   (ii) Explain how a hand saw is maintained to prevent rusting.

4. (a) Define the term survey station.

   (b) Explain how a simple chain survey is carried out to determine the area of a small

   plot of land.

5. (a) Discuss the factors that determine the design of a farm workshop.

   (b) (i) Explain the importance of adequate lighting in a farm workshop.

   (ii) Explain the importance of proper ventilation in a farm workshop.

SECTION B

SOIL SCIENCE

6. (a) Explain how biological weathering contributes to soil formation.

   (b) (i) Name two types of soil minerals.

   (ii) Describe the properties of primary soil minerals.

7. (a) Define soil structure and explain its importance to crop growth.

   (b) (i) Describe granular soil structure.

     (ii) Describe blocky soil structure.

8. (a) Explain the significance of soil air in the nitrogen cycle.

   (b) Describe how poor drainage affects the composition of soil gases.

SECTION C
RURAL ECONOMY

9. (a) Define the law of diminishing returns as applied in agriculture.

   (b) (i) Describe the three stages of production using the relationship between total

      product and marginal product.

     (ii) State the stage at which production is most efficient and give reasons.

   (c) A farmer applies fertilizer to a wheat field as follows:

Units of fertilizer: 0, 1, 2, 3, 4, 5

Total yield (bags): 20, 50, 90, 120, 140, 150

Calculate the marginal product for each unit of fertilizer.

   (d) Explain why marginal product eventually declines.

10.(a) Define agricultural marketing.

   (b) (i) List the functions of a marketing board.

     (ii) Distinguish between wholesalers and retailers.

   (c) A farmer sells a bag of maize at Tshs 40,000 and the consumer buys it at Tshs

     75,000. Calculate the marketing margin.

   (d) Discuss three problems faced by farmers when marketing perishable produce in

     rural areas.