THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

134/2 **AGRICULTURE 2**

(For Both School and Private Candidates)

Time : 3 Hours **ANSWERS** **Year : 2003**

Instructions

1. This paper consists of sections **three (3)** questions.
2. Answer **two (2)** questions.
3. Question one (1) carries **twenty (20)** marks and questions **two (2)** and **three (3)** carries **fifteen (15)** marks each.
4. Non-programable calculators may be used.
5. Cellular phones are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. You are provided with specimens: B1, B2, B3, C1, C2, C3, C4, D1, D2, D3, D4, and D5.

(a) (i) Identify specimens B1, B2, and B3
B1 is a clutch plate, B2 is a flywheel, and B3 is a gearbox gear.

(ii) State two main types of specimen B1 and their roles in tractor operation
The two main types of clutch plates are the dry clutch plate and the wet clutch plate. Dry clutch plates are used for smooth engagement and are common in light tractors, while wet clutch plates operate in oil, providing better cooling and longer life in heavy-duty tractors. Both types transmit power from the engine to the transmission system.

(iii) Outline three signs that indicate specimen B1 is damaged or worn out
Signs of a worn clutch plate include slipping of the clutch (engine revs increase without proportional tractor movement), difficulty in gear shifting, and unusual noises or vibration during clutch engagement.

(iv) Mention the unit of a tractor transmission system in which specimen B3 is found and describe its operating principle
B3 is part of the gearbox unit. Its operating principle involves engaging different gear ratios to adjust torque and speed transmitted from the engine to the wheels. The gear teeth mesh to transmit rotational motion while allowing the operator to select the desired speed and torque combination.

(b) (i) Identify specimens C2, C3, and C4
C2 is a hydraulic cylinder, C3 is a brake drum, and C4 is a power take-off (PTO) shaft.

(ii) State the uses of specimens C1, C2, and C4
C1 (steering wheel) is used to control tractor direction. C2 (hydraulic cylinder) is used to lift and lower implements. C4 (PTO shaft) transmits engine power to auxiliary implements such as a mower or water pump.

(iii) Differentiate between the roles of specimens C3 and C4
C3 (brake drum) is used to stop or slow down the tractor, while C4 (PTO shaft) is used to transfer mechanical power to external equipment.

(c) (i) Identify specimens D1, D2, D3, and D4
D1 is maize, D2 is urea fertilizer, D3 is cassava, and D4 is storage weevil.

(ii) Show the correct arrangement and indicate the type of fitting used when joining specimen D5
In a storage system, D1 and D3 are stacked separately in a granary; D2 is applied during soil preparation; D4 is controlled via chemical or physical methods. D5 (storage container lid) is joined using a screw fitting to ensure airtight closure, preventing pest entry.

2. You are provided with specimens: E1, E2, F1, F2, and F3.

(a) (i) Identify specimens E1 and E2
E1 is a maize plant, and E2 is a nitrogen fertilizer.

(ii) Outline four characteristics of specimen E2 that make it suitable for fertilizer application
E2 is soluble in water, readily available for plant uptake, provides a high concentration of nitrogen, and improves vegetative growth efficiently.

(iii) State the purpose of specimens E1 and E2 in crop production
E1 serves as the main crop for food or fodder, while E2 supplies essential nitrogen to enhance growth and increase yield.

(iv) Specify the growth stage at which specimen E2 is recommended for application
Nitrogen fertilizer is applied at the vegetative growth stage to promote leaf development and tillering.

(b) (i) Identify specimen F1 by its botanical name
F1 is cassava (Manihot esculenta).

(ii) Name the disease affecting specimen F1 and its causative organism
Cassava mosaic disease, caused by cassava mosaic virus.

(iii) Identify the disease present in specimen F2
F2 is maize, affected by maize streak virus.

(iv) List two modes of transmission of the disease in specimen F2
Transmitted by leafhoppers (vectors) and infected seeds.

(v) Provide the scientific name of specimen F3
F3 is Sitophilus zeamais (maize weevil).

(vi) Mention three crops commonly infested by F3
Maize, sorghum, and millet.

(vii) Suggest whether F3 is a field or storage pest and justify with two reasons
F3 is a storage pest because it attacks grains post-harvest, and infestation occurs in granaries rather than in the field.

3. You are provided with specimens: G1, G2, G3, and G4.

(a) (i) Identify specimens G1, G2, G3, and G4 using scientific names
G1 is groundnut (Arachis hypogaea), G2 is soybean (Glycine max), G3 is a tick (Rhipicephalus spp.), G4 is a cattle tick (Boophilus spp.).

(ii) State the best preservation method for specimens G1 and G2
Dry the seeds and store them in airtight containers to prevent moisture and pest damage.

(iii) Give three reasons why farmers conserve specimens G1 and G2
To ensure seed availability for the next season, maintain genetic quality, and prevent post-harvest losses due to pests or diseases.

(b) (i) Explain how specimen G4 can infest farm animals
Ticks attach to the skin of livestock, feeding on blood, causing irritation, and sometimes transmitting diseases.

(ii) Name two animals that are common hosts for specimen G4
Cattle and goats.

(iii) Describe the relationship between specimen G3 and G4
G3 and G4 are both ectoparasites of livestock; they share similar life cycles and feeding habits.

(iv) Outline three methods to control specimen G4 on livestock
Regular dipping with acaricides, pasture management, and manual removal of ticks.