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 : 2015**

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).

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Prepared by Maria Marco for TETEA

1. You are provided with specimens: A1, A2, A3, B1, B2, B3, B4, B5, C1, C2, C3, C4, and C5.

(a) (i) Identify specimens A1, A2, and A3

A1 is a clutch plate, A2 is a gear wheel, and A3 is a universal joint. These are parts of a tractor transmission system that help transfer power from the engine to the wheels.

(ii) State two main types of specimen A1 and their functions

The two main types of clutch plates are the single-plate clutch and the multi-plate clutch. A single-plate clutch is used in most tractors and light vehicles to transmit engine torque smoothly. A multi-plate clutch, which has more than one plate, is used in heavy tractors or motorbikes where a greater torque transmission is required.

(iii) Outline three operational faults that would indicate specimen A1 is damaged

If the clutch plate is damaged, the first sign is clutch slipping, where the engine speed increases but the tractor does not move accordingly. Another fault is difficulty in engaging gears, showing the clutch is not fully disengaging. The third sign is shuddering or jerky movement when releasing the clutch pedal, caused by worn linings or oil contamination.

(iv) Mention the unit of a tractor transmission system in which specimen A3 is used and explain its working principle

The universal joint is used in the propeller shaft unit of the transmission system. It works on the principle of flexibility, allowing the shaft to transmit rotary motion at varying angles. This ensures smooth transfer of power even when the tractor axle moves up and down on rough ground.

(b) (i) Identify specimens B3, B4, and B5

B3 is a ring spanner, B4 is an open-end spanner, and B5 is a shifting spanner. These are hand tools used for fastening and loosening bolts and nuts.

(ii) Describe the use of specimens B1, B2, and B5

B1, a hammer, is used for striking objects like nails or fitting parts. B2, a screwdriver, is used for tightening or loosening screws. B5, a shifting spanner, is adjustable and is used for gripping and turning different sizes of nuts and bolts.

(iii) Differentiate between the functions of specimen B3 and B4

A ring spanner (B3) grips the nut or bolt head on all sides, giving a firmer hold and is suitable for heavy

tightening. An open-end spanner (B4) grips only two opposite sides of a nut, making it easier to use in tight spaces but less firm in grip.

(c) (i) Identify specimens C1, C2, C3, and C4
C1 is a straight PVC pipe, C2 is an elbow joint, C3 is a T-joint, and C4 is a pipe socket. These are water supply fittings used on the farm.

(ii) Show their correct arrangement and name the fitting used when joining specimen C5
C1, C2, C3, and C4 are arranged to create water conveyance lines where straight pipes are joined using sockets, elbows change direction, and T-joints distribute water. Specimen C5, which is a union, is used to connect two pipes while allowing easy disconnection for repairs.

2. You are provided with specimens: D1, D2, E1, E2, and E3.
(a) (i) Identify specimens D1 and D2
D1 is a CAN (Calcium Ammonium Nitrate) fertilizer, while D2 is a Triple Superphosphate (TSP) fertilizer.

(ii) Outline four unique features of specimen D2
Triple Superphosphate has a high phosphorus content, usually above 45 percent. It is granular in nature and dissolves slowly in soil moisture. It is acidic in reaction, hence suitable for neutral or alkaline soils. Lastly, it promotes root development and flowering more than vegetative growth.

(iii) State the use of specimens D1 and D2
CAN is used to supply nitrogen for leafy growth in crops. TSP is used to supply phosphorus for root development, seed formation, and early maturity.

(iv) Mention the stage of crop growth when specimen D2 is recommended for application
TSP is applied at planting or during early seedling stages to encourage vigorous root establishment.

(b) (i) Identify specimen E1 by its botanical name
Specimen E1 is a maize plant (Zea mays).

(ii) State the disease on specimen E1 and its causative agent
The disease is maize streak disease, caused by the maize streak virus (MSV).

(iii) Identify the disease on specimen E2
E2 shows leaf blight disease.

(iv) List two methods of transmission of the disease in specimen E2
Leaf blight can be transmitted through infected crop residues in the field and by wind dispersal of spores from diseased plants.

(v) Give the scientific name of specimen E3
Specimen E3 is the maize weevil, Sitophilus zeamais.

(vi) Mention three crops mainly attacked by specimen E3
It attacks maize, sorghum, and millet.

(vii) Suggest whether specimen E3 is a storage or field pest, giving two reasons
It is a storage pest. First, it breeds and multiplies inside stored grains. Second, its damage is most severe during storage, where it creates holes and reduces grain weight.

3. You are provided with specimens: F1, F2, F3, and F4.
(a) (i) Identify specimens F1, F2, F3, and F4 by their scientific names
F1 is Napier grass (Pennisetum purpureum), F2 is Rhodes grass (Chloris gayana), F3 is a tick (Rhipicephalus appendiculatus), and F4 is a tsetse fly (Glossina morsitans).

(ii) Describe how specimens F1 and F2 may be preserved effectively
Napier and Rhodes grasses can be preserved through hay making, where they are cut, dried, and stored for future use. They can also be preserved through silage, where they are chopped and stored in an airtight silo to ferment and remain nutritious.

(iii) Give three reasons farmers conserve specimens F1 and F2
They conserve forage to ensure feed availability during the dry season. Conserved forage helps reduce feed costs as farmers rely less on purchased feeds. It also ensures continuous livestock productivity by preventing starvation during feed scarcity.

(b) (i) Explain how farm animals can be infested by specimen F4
Animals are infested by tsetse flies through bites when the fly feeds on their blood. During this process, the fly transmits trypanosome parasites into the animal's bloodstream.

(ii) Mention two livestock species that are common hosts of specimen F4

Cattle and goats are common hosts of the tsetse fly.

(iii) Explain the biological relationship between specimen F3 and F4

Both ticks and tsetse flies are parasites of livestock. They live on or feed on animals to obtain nutrients, causing harm to the host. This is a parasitic relationship.

(iv) Outline three ways of controlling specimen F4 on livestock

Control can be achieved by using insecticides to spray animals and tsetse breeding grounds. Clearing bushy areas where tsetse flies breed reduces their population. Keeping livestock in fly-proof enclosures during peak fly activity also prevents infestation.

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