THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

034/2 **AGRICULTURE 2**

Time : 2:15 Hours **ANSWERS** **Year : 2015**

Instructions

1. This paper consists three questions.
2. Answer **two** questions.
3. Communication devices and any unauthorised materials are **not** allowed in the examination room.
4. Write your **Examination Number** on every page of your answer booklet(s).

1. You are provided with specimens A, B, C, D, E, F, G, H, I and J. Observe them carefully and answer the following questions:

(a) (i) Identify each of specimens A, B, C and D.
Specimen A is a piston.
Specimen B is a piston ring.
Specimen C is a carburetor.
Specimen D is a cylinder head.

(ii) State how are specimens A and B used?
The piston (A) is used to transfer force from expanding gases in the cylinder to the crankshaft. The piston ring (B) is used to seal the combustion chamber, control oil consumption, and transfer heat from the piston to the cylinder wall.

(iii) Explain briefly the mechanism of functioning of specimen C in a four-stroke engine.
The carburetor mixes air and fuel in the correct proportion before it enters the combustion chamber. During the intake stroke, air passes through the carburetor venturi, drawing in fuel, which atomizes to form a combustible mixture.

(iv) How specimen D assists in forming a combustion chamber in the engine?
The cylinder head (D) closes the top of the cylinder and houses valves and spark plugs, thereby providing the space above the piston where combustion occurs.

(b) (i) Identify each of specimens E and F.
Specimen E is an oil filter. Specimen F is fuel filter.

(ii) What is the relationship between specimens E and F?
Both specimens filter impurities, with specimen E cleaning lubricating oil and specimen F cleaning fuel, ensuring efficient engine operation.

(iii) Outline four considerations to be observed when using specimen E.
The oil filter must be changed at recommended intervals. Correct filter size must be used. Oil must be replaced after changing the filter. The sealing gasket must be checked for leaks.

(c) (i) State two qualities of how specimen G should be.

Specimen G, a spanner, should be strong enough to withstand torque and made of durable, non-rusting steel.

(ii) Briefly explain how specimen G performs its function.

The spanner grips nuts or bolts and applies torque to tighten or loosen them.

(d) (i) Identify each of specimens H, I and J.

Specimen H is a water pump.

Specimen I is a radiator.

Specimen J is a plough.

(ii) Describe briefly how specimen H works.

The water pump circulates coolant through the engine block and radiator by impeller action, keeping the engine temperature regulated.

(iii) State five conditions in which the use of specimen I is more appropriate than specimen J.

The radiator is used in an internal combustion engine. It is appropriate in vehicles where heat needs to be dissipated. It is suitable for engines working continuously for long hours. It is used in engines exposed to heavy load. It is necessary in places where overheating is common.

(iv) Why is specimen J not preferred for use in some crops especially in the dry season?

The plough disturbs the soil excessively, increasing moisture loss, which is undesirable during dry seasons.

2. You are provided with specimens K, L, M, N, O, P, Q and R. Observe them carefully and answer the following questions:

(a) (i) State two damage symptoms for specimen K.

Specimen K, aphids, cause curling and yellowing of leaves, and stunted growth in plants.

(ii) Briefly explain three outcomes of feeding behaviour for specimen K.

Aphids suck sap, weakening the host plant. They transmit viral diseases. They produce honeydew, which encourages sooty mold.

(iii) Suggest two control measures for the pest in specimen L.
Specimen L, maize weevil, can be controlled by storing grain in airtight containers and treating with insecticides.

(b) (i) Name the disease affecting plant in specimen M.
Specimen M, root knot nematode, causes root knot disease.

(ii) State four effects caused by the pathogen in specimen M.
It causes galls on roots, reduces water and nutrient uptake, leads to stunted growth, and reduces crop yield.

(iii) Elaborate the physiological effect caused by the presence of galls on the roots of specimen M.
Galls interfere with water absorption and nutrient translocation, leading to poor photosynthesis and growth.

(iv) Propose six ways of preventing fungal infection in specimen N that is to be stored after harvest.
Dry properly before storage. Store in clean containers. Avoid mechanical damage. Use fungicides. Keep in cool, dry conditions. Practice hygiene in storage facilities.

(c) (i) State four damage symptoms that specimen O cause to the host plant.
Specimen O, locusts, defoliate plants, cut stems, reduce photosynthetic area, and destroy crops completely in swarms.

(ii) Examine three management measures for specimen O.
Use of chemical sprays, biological control through natural predators, and early warning systems with mass trapping.

(iii) Why is specimen P difficult to control?
Specimen P, Striga, produces many seeds and parasitizes roots underground, making it hard to detect early.

(d) (i) Explain briefly what you should do when planting specimen Q in an area known to have banana weevils.
Use clean planting materials and treat with hot water or pesticides before planting.

(ii) What are the two preventive measures to take against nematodes when planting specimen Q?
Crop rotation and use of resistant banana varieties.

(iii) Briefly describe the process of propagating specimen R.
Specimen R, cassava, is propagated by stem cuttings planted directly into the soil.

3. You are provided with specimens S, T, U, V, W, X, Y and Z. Observe them carefully and answer the following questions:

(a) (i) Describe briefly how specimen S is used for its purpose.
Specimen S, pruning shears, are used to cut branches for shaping plants and improving light penetration.

(ii) Account for three reasons for trimming specimen T.
Trimming improves yield, prevents pest harboring, and improves airflow.

(b) (i) Describe briefly the method of castrating a bull calf using specimen U.
Specimen U, a castration burdizzo, crushes spermatic cords without cutting the skin, rendering the calf sterile.

(ii) Explain briefly the management practice done by using specimen V in poultry and state two importance of the practice.
Specimen V, debeaking equipment, is used to trim beaks of poultry to prevent cannibalism and reduce feed wastage.

(c) (i) Account for the structural adaptation and the effect of specimen W in the animal body.
Specimen W, a rumen, has microbes that digest cellulose, providing volatile fatty acids for energy.

(ii) Outline three importance of specimen X to the newly born animal.
Specimen X, colostrum, provides antibodies, gives energy, and aids digestion.

(d) (i) What is the importance of specimen Y to farm animals?
Specimen Y, salt lick, supplies minerals needed for growth and productivity.

(ii) Describe the process of making specimen Z.
Specimen Z, silage, is made by compacting green forage in airtight silos where anaerobic bacteria ferment sugars to preserve feed.

(iii) How is specimen Z important in animal production?

Silage provides nutritious feed during dry seasons, increases milk yield, and supports continuous livestock production.