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 : 2014**

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 the specimens M_1, M_2, M_3, M_4, M_5, M_6 and M_7. Study them carefully and answer these questions that follow:

(a) (i) Identify specimens M_2, M_3 and M_5 by their scientific names.
Specimen M_2 is Colletotrichum lindemuthianum.
Specimen M_3 is Striga hermonthica.
Specimen M_5 is Musa paradisiaca.

(ii) Outline damage caused by each of the specimens M_1 and M_4 to crop plants.
Specimen M_1, a maize stalk borer, bores into maize stems, weakening the plant and reducing yield.
Specimen M_4, maize weevil, attacks stored grains, reducing quality and quantity of maize.

(iii) Briefly explain two control measures which farmers may take to control each of the specimens M_1 and M_4.
For specimen M_1, control can be done by crop rotation to break the pest's cycle and by using resistant maize varieties. For specimen M_4, control can be done by storing maize in airtight containers and by treating stored grains with recommended insecticides.

(b) (i) Examine the importance of 'formative pruning' in specimen M_2.
Formative pruning helps shape the crop for better aeration, reduces disease incidence, and improves yield by directing nutrients to productive branches.

(ii) Briefly explain why specimen M_5 should not be grown in areas with a lot of wind and suggest what should be done in such a situation.
Banana plants should not be grown in windy areas because strong winds topple them easily due to shallow roots. In such situations, windbreaks such as trees should be planted around banana fields.

(iii) Suggest how a farmer should store specimen M_7 for consumption after harvest.
Cassava should be stored by processing into dried chips or flour to prevent rapid spoilage after harvest.

(iv) Name one important disease affecting specimen M_6 and propose one effective control measure for the disease.
Tomato blight affects specimen M_6. It can be controlled by spraying fungicides and practicing crop rotation.

(v) Suggest suitable climatic and soil requirements for specimen M_6.
Tomato requires warm temperatures of about 20–25°C, moderate rainfall, and fertile, well-drained loamy soils rich in organic matter.

(vi) One of the most serious diseases affecting specimen M_7 is the viral disease. What are the symptoms and control measure for the viral disease?
The symptoms include mosaic patterns on leaves, stunted growth, and malformed roots. Control is by planting resistant cassava varieties and controlling whiteflies which spread the virus.

(c) (i) Briefly explain why it is difficult to control specimen M_3.
Striga weed is difficult to control because it produces many seeds that can remain dormant in the soil for years, and it parasitizes crop roots underground.

(ii) Briefly explain how specimen M_1 causes loss in maize plants.
The maize stalk borer feeds inside the stem, destroying vascular tissues, reducing water and nutrient transport, and causing poor grain filling.

(iii) How can specimen M_3 be controlled in heavy infestation?
Striga can be controlled by practicing crop rotation with non-host crops, using herbicide-resistant maize varieties, and uprooting weeds before they flower.

2. You are provided with specimens N_1, N_2, N_3, N_4, N_5, N_6, N_7 and N_8. Observe them carefully and answer the questions that follow:

(a) (i) Identify each of the specimens N_2, N_4 and N_5.
Specimen N_2 is a watering can.
Specimen N_4 is a spray pump.
Specimen N_5 is a milking machine.

(ii) Mention four ways in which specimen N_5 is adapted to the function it performs.
It has vacuum pumps to suck milk efficiently. It has teat cups designed to fit on animal teats. It has pipelines for transferring milk into containers. It has a regulator to control suction pressure and prevent injury.

(iii) State the function of each of the specimens N_2, N_4 and N_5 in animal management.
Specimen N_2 is used to water animals or clean animal houses.
Specimen N_4 is used to spray pesticides or acaricides on animals.
Specimen N_5 is used to milk dairy animals hygienically and efficiently.

(iv) Briefly explain how specimen N_4 performs its function.
The spray pump works by building pressure inside the container and releasing liquid through a nozzle as a fine mist that coats the animal's body.

(v) What is the importance of the practice done by using specimen N_2?
Watering ensures animals remain hydrated, which supports health, productivity, and digestion.

(vi) Briefly explain why specimen N_2 is not commonly used for the function it performs and name the other three methods that are used for the purpose.
The watering can is not practical for large herds because it is slow and labor-intensive. Other methods used include water troughs, automatic drinkers, and dams or ponds.

(b) (i) Under what type of feed stuff will you classify each of the specimens N_3 and N_7?
Specimen N_3, hay, is classified as roughage. Specimen N_7, fish meal, is classified as protein supplement.

(ii) Outline four characteristics of a class of feed stuff to which specimen N_6 belongs.
Specimen N_6, maize bran, belongs to energy feeds. They are rich in carbohydrates, easily digestible, low in fibre, and provide quick energy.

(iii) Categorize specimens N_1 and N_8 into the types of feed stuff on the basis of nutrients they contain.
Specimen N_1, cotton seed cake, is a protein feed. Specimen N_8, mineral lick, is a mineral supplement.

(iv) Briefly explain four functions of specimen N_7 in the bodies of animals.
Fish meal provides amino acids for growth, enhances milk production, supports reproduction, and boosts immunity.

(c) (i) Give the scientific name of specimen N_6.
The scientific name of maize bran is Zea mays.

(ii) State the importance of specimen N_6 in agriculture.

It provides energy to livestock and reduces feed costs by using milling by-products effectively.

3. You are provided with specimens Q_1, Q_2, Q_3, Q_4, Q_5, Q_6 and Q_7. Observe them carefully and answer the questions that follow:

(a) (i) Identify each of the specimens Q_2, Q_6 and Q_7.

Specimen Q_2 is a sandy soil sample.

Specimen Q_6 is a plough.

Specimen Q_7 is a harrow.

(ii) State the function of each of the specimens Q_6 and Q_7.

Specimen Q_6 is used to till and turn the soil before planting.

Specimen Q_7 is used to break soil clods and level the seedbed.

(iii) Briefly explain how specimen Q_6 functions when it is both engaged and not engaged.

When engaged, the plough cuts and turns over the soil as the tractor pulls it. When not engaged, it is lifted above the ground and does not disturb the soil.

(iv) Outline six ways to show how you would care and maintain specimen Q_6.

Clean after use to prevent rusting. Grease moving parts. Replace worn-out blades. Store in a dry shed. Tighten loose bolts and nuts. Inspect regularly for damage.

(b) (i) Using feel method, identify each of the specimens Q_2, Q_3 and Q_4. Give reason for your identification.

Specimen Q_2 is sandy soil because it feels gritty.

Specimen Q_3 is clay soil because it feels sticky when wet.

Specimen Q_4 is loam soil because it feels smooth and crumbly.

(ii) Mixing Q_2, Q_3 and Q_4 results into an ideal soil, give the name of the resulting soil and suggest the proportion of each of the specimens to be mixed to result into an ideal soil.

The resulting soil is loam. The ideal proportion is 40% sand, 40% silt, and 20% clay.

(iii) What would be the consequences of having a high proportion of specimen Q_2 in the soil?

The soil would drain too quickly, losing water and nutrients, and making it unsuitable for most crops.

(iv) Explain the major agronomic problems which face the soil with high proportion of specimen Q_3.
Clay soils become waterlogged easily, are hard to till when wet, and crack when dry.

(c) (i) Q_1 is of special importance to the soil. State six benefits of specimen Q_1 to the soil.
Specimen Q_1, organic matter, improves soil structure, increases fertility, enhances water retention, promotes microbial activity, reduces erosion, and provides slow nutrient release.

(ii) Comment on the residual effect of specimen Q_1.
The residual effect is that it continues to improve soil fertility and structure over a long period after application.

(iii) Briefly explain why specimen Q_1 should be kept compact and moist but not wet.
It should be compact and moist to encourage decomposition by microbes but not wet to avoid rotting and loss of nutrients through leaching.