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 : 2013**

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 and E. Observe them carefully and answer the questions that follow:

(a) (i) Give the common names for each of the specimens A and B.
Specimen A is a maize stalk borer.
Specimen B is a maize weevil.

(ii) Which crop does each of the specimens A and B attack?
Both specimens attack maize crops, specimen A attacking maize stalks while specimen B attacks stored maize grains.

(iii) Explain in brief one important cultural method of controlling specimen A.
One important cultural method is crop residue destruction, where maize stalks are uprooted and burnt after harvest to destroy the stalk borer larvae and pupae hiding inside.

(b) (i) Give the botanical name of specimen C.
The botanical name of specimen C, tomato, is Lycopersicon esculentum.

(ii) What is the family in which specimen C belongs?
Specimen C belongs to the family Solanaceae.

(iii) Briefly explain why it is not advised to splash water on the leaves of specimen C when watering.
Splashing water on tomato leaves encourages fungal diseases such as blight, because the moisture provides a favorable environment for pathogen development.

(iv) What is the importance of cutting the growing tip of specimen C when about 4 to 6 branches of fruit have been formed?
Cutting the growing tip helps in diverting nutrients to fruit development instead of vegetative growth, resulting in bigger and healthier fruits.

(v) Give four reasons as to why the soil in which specimen C is grown should be covered with mulch.
Mulching conserves soil moisture by reducing evaporation. It suppresses weed growth. It regulates soil temperature, keeping it cooler. It prevents soil erosion and splash of soil-borne diseases onto tomato plants.

(vi) Identify six important pests of specimen C.
Important pests include tomato fruit borer, aphids, whiteflies, thrips, cutworms, and leaf miners.

(vii) Browning and rotting of fruits of specimen C normally indicate the symptoms of a disease. Identify the disease and its causative agent.
The disease is blossom end rot caused by calcium deficiency and unfavorable water conditions.

(c) (i) Identify specimen D.
Specimen D is a cabbage.

(ii) Briefly explain why organic manures are not used when growing specimen D.
Organic manures release nutrients slowly, while cabbage requires quick nutrient availability. In addition, organic manures may harbor pests and diseases.

(iii) Name one important disease of specimen D and suggest how the disease can be controlled.
One important disease is black rot. It can be controlled by crop rotation and use of disease-free seeds.

(iv) Suggest the suitable climatic requirements for growing specimen D.
Cabbage requires cool temperatures between 15–20°C and moderate rainfall with well-drained fertile soils.

(d) (i) Identify specimen E.
Specimen E is silage.

(ii) Why should specimen E be stored in a heap under shelter?
It should be stored under shelter to prevent spoilage by rainwater and exposure to direct sunlight, which reduce its nutritive value.

(iii) Briefly describe the process of formation of specimen E.
Silage is formed by storing green forage in airtight conditions where anaerobic bacteria ferment sugars into lactic acid, preserving the forage.

2. You are provided with specimens F, G, H, I, J, K and L. Observe them carefully and answer the following questions:

(a) (i) Identify each of specimens F and G.
Specimen F is hay.
Specimen G is a milking machine.

(ii) Outline four methods for preserving a product which brings about specimen F.
Hay can be preserved by sun drying, barn drying, artificial drying using machines, and chemical treatment to reduce spoilage.

(iii) Account for four usefulness of a method with which specimen G is used for in farm animal management.
Milking machines save time during milking. They improve hygiene and reduce contamination. They reduce physical strain on farmers. They also ensure uniform and complete milk extraction.

(b) (i) Name specimen K.
Specimen K is a dip tank.

(ii) Describe the mechanism functioning of specimen K.
Animals are guided into the tank filled with diluted acaricide solution. As they move through, their bodies are fully submerged and coated with the solution, which kills external parasites like ticks.

(iii) What are the other materials used for the same purpose as specimen K?
Other materials include hand sprayers, knapsack sprayers, and spray races.

(c) (i) Identify specimens H, I and J by giving their botanical names.
Specimen H is Phaseolus vulgaris (bean).
Specimen I is Vigna unguiculata (cowpea).
Specimen J is Arachis hypogaea (groundnut).

(ii) Examine the adaptations of specimens H, I and J in the field.
Beans adapt by having climbing or bushy habits for support and maximum light capture. Cowpeas adapt by being drought-resistant with deep roots. Groundnuts adapt by producing pods underground for protection and moisture retention.

(iii) What is the importance of specimens H, I and J to farm animals?
They are sources of protein when used as fodder or crop residues. They also improve soil fertility through nitrogen fixation, indirectly benefiting animal feed production.

(iv) Briefly explain two disadvantages of chemical control of specimens H, I and J.
Chemical control is expensive and may not be sustainable for small farmers. It also leads to environmental pollution and resistance in pests.

(d) (i) Identify specimen L by giving its common name.
Specimen L is a tick.

(ii) Describe the life cycle of specimen L.
The tick life cycle includes egg, larva, nymph, and adult. Each stage feeds on a host before developing into the next stage.

(iii) Give four ways of controlling specimen L.
Ticks can be controlled by dipping animals in acaricides, spraying with insecticides, pasture rotation, and handpicking.

3. You are provided with specimens M, N, O, P and R. Observe them carefully and then answer the following questions:

(a) (i) Identify each of specimens M, N and O.
Specimen M is farmyard manure.
Specimen N is compost manure.
Specimen O is green manure.

(ii) Give five properties of each of the specimens M and N.
Farmyard manure is bulky, has low nutrient concentration, improves soil structure, retains water, and increases microbial activity.
Compost manure is decomposed plant matter, has humus, improves aeration, has moderate nutrients, and enhances soil fertility.

(iii) Comment on the workability as far as cultivation is concerned for areas with high proportions of each of specimens M and N.

Soils with high farmyard manure are loose and easier to cultivate. Soils with compost manure are friable, aerated, and easy to work with.

(iv) Giving reasons, compare the fertility status in each of specimens M and N.
Farmyard manure releases nutrients slowly and for a longer time, maintaining fertility. Compost manure releases nutrients quickly, providing immediate fertility but short-lived.

(b) (i) Identify each of specimens P, Q and R.
Specimen P is nitrogen fertilizer.
Specimen Q is phosphate fertilizer.
Specimen R is potash fertilizer.

(ii) Suggest the best time for applying specimens P, Q and R. Give reasons for your answer.
Nitrogen fertilizer should be applied during vegetative growth to promote leaves. Phosphate fertilizer should be applied at planting for root development. Potash fertilizer should be applied at flowering and fruiting to improve yield and quality.

(iii) State the effects of specimens P, Q and R on soil acidity upon repeated application.
Repeated application increases soil acidity, making soils less productive.

(iv) Why too much application of specimens P, Q and R should be avoided especially on cereal crops?
Excessive fertilizer causes lodging, nutrient imbalance, and environmental pollution.

(v) Specimens P, Q and R should be applied in every cropping season. Briefly explain.
They replenish nutrients removed by crops and maintain soil fertility for continuous production.

(c) (i) Identify each of specimens S and T.
Specimen S is a knapsack sprayer.
Specimen T is a watering can.

(ii) State the use of each of specimen above.
A knapsack sprayer is used for spraying pesticides, fungicides, and foliar fertilizers.
A watering can is used for irrigating seedlings and small plots.