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 : 2016**

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

(a) (i) Identify each of specimens A and D by their botanical name.
Specimen A is Zea mays (maize).
Specimen D is Glycine max (soybean).

(ii) Give two main reasons why seeds of specimen A have to be treated.
The seeds must be treated to protect them from soil-borne pests and diseases. They must also be treated to improve germination and establishment in the field.

(iii) State any two importance of specimen A plant in core production.
Maize provides food for humans in the form of flour or boiled grains. It also provides animal feed in the form of silage or crop residues.

(iv) Briefly explain three methods of harvesting specimen A.
Harvesting can be done by hand picking mature cobs. It can also be done by cutting stalks and removing cobs later. Mechanical harvesters can also be used in large farms.

(v) Name rhizobium strain which fix nitrogen in specimen D.
The rhizobium strain is Rhizobium japonicum.

(b) (i) Identify specimens B and C by their scientific names.
Specimen B is Sitophilus zeamais (maize weevil).
Specimen C is Tribolium castaneum (red flour beetle).

(ii) How could you control specimens B and C?
Control can be achieved by storing grains in airtight containers. Another method is applying inert dusts or recommended insecticides.

(iii) State six ideal measures to be taken in order to reduce the rapid development of specimen C in storage of grain.
Grains must be dried to safe moisture content. Storage containers should be airtight. Stores must be cleaned before storage. Infested residues must be destroyed. Regular inspection should be done. Good aeration should be ensured in the store.

(c) (i) State four factors which determine the quality of specimen E.
Specimen E, hay, is determined by its stage of harvesting, its colour, its leaf-to-stem ratio, and its storage condition.

(ii) Outline seven steps to be followed during hand baling of specimen E.
The hay should first be properly dried. It should then be collected and heaped. It should be placed into a baling box. The hay is pressed to reduce volume. Binding materials are tied around the compressed hay. The bale is removed from the box. Finally, bales are stored in a dry place.

(iii) How could you improve the palatability of specimen E in livestock?
Palatability can be improved by mixing it with molasses.

(d) (i) Identify specimens F and G by their scientific names.
Specimen F is Rhipicephalus appendiculatus (brown ear tick).
Specimen G is Nicotiana tabacum (tobacco plant).

(ii) State two control measures of specimen F.
Ticks can be controlled by spraying acaricides and by practicing rotational grazing.

(iii) Briefly describe three typical symptoms infection which can be observed in specimen G.
Infected tobacco shows mosaic mottling of leaves. Leaves become distorted and curled. Plant growth becomes stunted.

(iv) Briefly describe the 'mosaic' pattern of disease in specimen G.
The mosaic pattern is characterized by alternating dark green and light green areas on the leaf surface.

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

(a) (i) State five microbial activities which takes place in specimen H.
Microbes decompose organic matter. They fix nitrogen. They break down toxins. They improve soil aeration. They recycle nutrients.

(ii) Briefly describe the specimen H.
Specimen H, compost manure, is dark, crumbly and rich in humus.

(b) (i) State five characteristics of specimen I.
Specimen I, honey bee, has a segmented body. It has compound eyes. It has two pairs of wings. It has a stinger. It has specialized legs for pollen collection.

(ii) What are the five factors to be considered in siting the apiary for specimen I?
The apiary should be near water sources. It should be near flowering plants. It must be protected from wind. It should be away from human disturbance. It must be easily accessible for management.

(iii) Name four materials which are collected by specimen I for making its products.
Bees collect nectar, pollen, propolis, and water.

(iv) Give two uses of processed specimen J.
Processed specimen J, milk, is used for making butter and cheese.

(c) (i) Identify specimens L and M by their botanical name.
Specimen L is Medicago sativa (alfalfa).
Specimen M is Vigna unguiculata (cowpea).

(ii) State six desirable qualities for specimens L and M in livestock keeping.
They are high in protein content. They fix nitrogen, improving soil fertility. They are palatable to livestock. They are fast-growing. They are drought tolerant. They produce high yields.

(iii) Outline ten practices that should be taken into consideration in order to manage specimens L and M for livestock keeping.
They should be planted at the right spacing. Fertilizers or manure should be applied. Weeding must be done regularly. Pests and diseases should be controlled. Irrigation should be applied in dry seasons. They should be harvested at the correct stage. Storage should be done properly. Rotational grazing should be practiced. Replanting should be done after depletion. Mulching should be used to conserve moisture.

(iv) Provide four ingredients for making artificial of specimen K.
Artificial milk can be made using powdered milk, water, vegetable oil, and vitamins.

(d) (i) Identify specimen N.
Specimen N is mineral lick.

(ii) What is the use of specimen N?

It provides essential minerals like calcium and phosphorus to livestock.

3. You are provided with specimens O, P, Q, R, S, T and U. Observe them carefully and answer the questions that follow:

(a) (i) Briefly describe the procedure for using specimen O.

Specimen O, a soil auger, is inserted into the ground. The handle is turned to cut through soil. The auger is lifted to remove a soil sample.

(ii) What are the relationship between specimen O and P?

Specimen O is used to collect soil samples, while specimen P, a soil testing kit, is used to analyze the samples.

(b) (i) Identify specimen Q.

Specimen Q is lime.

(ii) What is the use of specimen Q?

It is used to neutralize soil acidity.

(iii) Account for three extreme effects of soil acidity which has not been controlled by application of specimen Q to plant growth.

Soil acidity reduces nutrient availability. It increases aluminum toxicity. It decreases microbial activity in soil.

(c) (i) Identify specimen R.

Specimen R is farmyard manure.

(ii) What are the four challenges of using specimen R in farming?

It is bulky and difficult to transport. It may contain weed seeds. It decomposes slowly. It may emit foul smell.

(iii) Briefly explain three agronomic practices to be adopted to maintain the soil organic matter content hence soil fertility apart from using specimen R.

Crop rotation should be practiced. Green manuring should be used. Mulching should be applied.

(iv) Account for the effects of using specimen R which has a wide C:N ratio in the soil with deficient in Nitrogen.

It causes immobilization of nitrogen, leading to temporary deficiency in crops.

(d) (i) State the process involved in using specimen S in oxenization.

Specimen S, a yoke, is placed on oxen to harness them for ploughing.

(ii) Outline four components to be used in making specimen S.

A yoke is made from wood, metal clamps, ropes, and bolts.

(iii) Apart from specimen S, list other two types of specimen.

Other implements include harness and chains.

(iv) State four classes of animals used for draughtwork with specimen S.

Oxen, donkeys, camels, and horses are used.

(e) Propose three equipment which are used together with specimen T in its function.

Specimen T, a plough, is used with oxen, chains, and yokes.

(f) (i) With the aid of specimen U, name the main three types of plastering.

The main types are mud plastering, lime plastering, and cement plastering.

(ii) State three methods of laying specimen U in masonry work.

Specimen U, bricks, can be laid in English bond, Flemish bond, and header bond.