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 : 2011**

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 each of the specimens carefully and then answer the questions that follow:

(a) (i) Identify each of the specimens A, B, C, E and F by their common and scientific names.
Specimen A is maize stalk borer, scientifically known as Busseola fusca.
Specimen B is cotton stainer, scientifically known as Dysdercus spp.
Specimen C is Rhizobium bacteria, scientifically known as Rhizobium leguminosarum.
Specimen E is Azolla, scientifically known as Azolla pinnata.
Specimen F is Striga weed, scientifically known as Striga hermonthica.

(ii) Name one cash crop affected by each of specimens A and B.
Specimen A affects maize, which is a major staple and cash crop.
Specimen B affects cotton, which is one of the main cash crops.

(iii) State one harmful effect of each of specimens A and B to plants they infect.
Specimen A bores into maize stems, weakening the plant and reducing yield.
Specimen B sucks sap from cotton bolls and stains lint, lowering quality and market value.

(b) Propose three cultural methods that can be used to control specimen A.
Crop rotation can be used to break the life cycle of maize stalk borers.
Early planting of maize ensures the crop escapes peak infestation periods.
Proper destruction of maize stalk residues after harvest kills larvae and pupae hiding in stalks.

(c) (i) Examine the importance of specimens C and E.
Rhizobium bacteria in specimen C fix atmospheric nitrogen in legume root nodules, enriching soil fertility.
Azolla in specimen E is a green manure that fixes nitrogen and improves soil productivity.

(ii) Assess the competitive effects of specimen F on crops.
Striga weed competes with crops for water, nutrients and light, reducing crop yield drastically. It parasitizes host roots, further weakening crop growth.

(d) (i) Identify each of the specimens D and G.
Specimen D is a nitrogen fertilizer, specifically urea.
Specimen G is waterlogged soil.

(ii) Briefly, explain how you would control the condition in G.

To control waterlogging, farmers should establish proper drainage channels to remove excess water.

Planting on raised ridges also reduces root suffocation and crop damage.

2. You are provided with specimens H, I, J and K. Study them carefully and then answer the questions that follow:

(a) (i) Identify each of the specimens H, I, J and K.

Specimen H is Napier grass.

Specimen I is cotton seed cake.

Specimen J is maize bran.

Specimen K is fish meal.

(ii) State the classes of livestock feeds for each of the specimens H, I, J and K.

Specimen H is a roughage feed.

Specimen I is a protein supplement.

Specimen J is an energy feed.

Specimen K is an animal protein feed.

(iii) Give two properties of each class of feed stuff identified in (ii) above.

Roughages like Napier grass are bulky and have high fibre but low digestibility.

Protein supplements like cotton seed cake have high protein content and are important for growth and milk production.

Energy feeds like maize bran provide carbohydrates and are highly digestible.

Animal protein feeds like fish meal are rich in essential amino acids and minerals.

(b) (i) State the main nutrient present in each of specimens H, I, J and K and their functions.

Specimen H provides fibre which aids in digestion.

Specimen I provides protein for growth and repair.

Specimen J provides carbohydrates for energy.

Specimen K provides proteins and minerals for muscle development and body building.

(ii) Comment on the digestibility of each of specimens H and I. Give reasons for your answer.

Specimen H has low digestibility due to its high fibre content and lignin.

Specimen I has high digestibility because proteins are easily broken down and absorbed by livestock.

(iii) Giving reasons, suggest the types of animals which are suitable to be fed with each of specimens H and I.

Specimen H is suitable for ruminants like cattle and goats because their rumen bacteria can digest fibre.

Specimen I is suitable for both ruminants and non-ruminants because proteins are needed universally for growth.

(iv) Name four other ingredients which should be supplemented to specimen I to make it a balanced feed.

Ingredients include maize meal, molasses, mineral salts, and fish meal.

(c) Briefly explain three factors that a farmer should consider when selecting feeds for farm animals.

The farmer should consider the nutritional requirement of the animal depending on age and production stage.

The availability and cost of the feed should also be considered for economic sustainability.

The farmer should also consider the digestibility and palatability of the feed to ensure animals consume it effectively.

3. You are provided with specimens M, N, O, P, Q, R, S and T. Observe each of the specimens carefully and then answer the questions that follow:

(a) (i) Identify each of the specimens M, N, O, P, Q, R, S and T.

Specimen M is a hoe.

Specimen N is a rake.

Specimen O is a wheelbarrow.

Specimen P is a watering can.

Specimen Q is a hand fork.

Specimen R is a panga.

Specimen S is manure.

Specimen T is compost.

(ii) Explain briefly the use of each of the specimens M, N, O, P and Q.

The hoe is used for tilling and weeding.

The rake is used for levelling soil and collecting debris.

The wheelbarrow is used for transporting materials.

The watering can is used for irrigating crops.

The hand fork is used for loosening soil and weeding around plants.

(b) (i) Outline six properties of specimen S.

Manure has high organic matter content.

It improves soil structure.

It provides nutrients slowly over time.

It increases water-holding capacity of soil.

It enhances microbial activity.

It is bulky and requires large quantities.

(ii) Give reasons as to why specimen S should be applied ahead of sowing or planting time.

It should be applied early to allow decomposition and nutrient release before crop establishment.

(iii) Giving reasons, briefly explain the suitable methods of application of specimen R to the soil for widely spaced crops.

Panga cut weeds should be left as mulch to retain moisture and decompose, returning nutrients to the soil.

(c) (i) Briefly explain three advantages of using specimen T as compared to specimens R and S.

Compost is lighter to handle than manure.

It decomposes faster and releases nutrients readily.

It has fewer weed seeds compared to farmyard manure or cut weeds.

(ii) Suggest the reasons for specimen T having low nutrient content.

Compost may have low nutrients if the raw materials used were poor in nutrients.

Losses may also occur due to leaching or volatilization during decomposition.