**THE UNITED REPUBLIC OF TANZANIA**

**NATIONAL EXAMINATIONS COUNCIL OF TANZANIA**

**CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**

**034/1** **AGRICULTURE 1**

**Time : 3 Hours** **ANSWERS** **Year : 2024**

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**Instructions**

1. This paper consists of section A, B and C.
2. Answer **all** questions in section A and B and **two (2)** questions from section C.
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).

**(i) What are the benefits of a commercial farming?**

(i) Provide high quality products

(ii) May cause land scarcity

(iii) Is a source of government revenue through taxes

(iv) Specialization in production may be risky

(v) Provides employment opportunities

A (i), (ii) and (iii)

B (ii), (iv) and (v)

C (i), (iii) and (v)

D (iv) and (v)

E (ii) and (iv)

**Correct choice: C (i), (iii) and (v)**

Commercial farming provides high quality products because it uses improved technology and better farm inputs. It is also a source of government revenue through taxes since farmers sell in large markets and pay tax. In addition, it creates employment opportunities for workers engaged in farming, processing, and distribution. The other options like land scarcity and production risk are disadvantages, not benefits.

**(ii) Which term refers to the act of cutting trees from the forest land?**

A Afforestation

B Overgrazing

C Deforestation

D Silviculture

E Pruning

**Correct choice: C Deforestation**

Deforestation is the correct term because it refers to the removal or cutting down of trees from forested land. Afforestation means planting trees, overgrazing is excessive feeding of animals on land, silviculture is tree management, and pruning is trimming branches, not cutting down the whole tree.

**(iii) What could be an appropriate farm structure for restraining an animal for insemination, pregnancy diagnosis and identification marks operations?**

A Dip

B Spray race

C Crush

D Parlor

E Pen

**Correct choice: C Crush**

A crush is designed to restrain animals safely for operations like insemination, diagnosis, and treatment. A dip is used for controlling external parasites, a spray race is for spraying animals, a parlor is used in milking, and a pen is a general enclosure, not specific for restraining animals for veterinary operations.

**(iv) How long do biennial crops live?**

A One year

B Two years

C Three years

D Four years

E Five years

**Correct choice: B Two years**

Biennial crops live for two years. In the first year, they grow vegetatively, and in the second year, they flower, produce seeds, and die. Examples include carrots and beetroots. Annuals live one year and perennials more than two.

**(v) The following are advantages of agroforestry practices except:**

A Solving the farm limited resources

B Controlling pests and diseases

C Increasing biodiversity

D Regulating the climate change

E Controlling soil erosion

**Correct choice: A Solving the farm limited resources**

Agroforestry cannot solve the problem of limited land resources. It only maximizes use of land by combining trees and crops. However, it truly helps in controlling soil erosion, pests, diseases, regulating climate, and increasing biodiversity.

**(vi) Which analysis represents the correct distribution of percentages in soil component?**

A Mineral matter 5%, Water 45%, Air 25% and organic matter 25%

B Mineral matter 25%, Water 5%, Air 45% and organic matter 25%

C Mineral matter 50%, Water 10%, Air 40% and organic matter 20%

D Mineral matter 45%, Water 25%, Air 25% and organic matter 5%

E Mineral matter 30%, Water 30%, Air 20% and organic matter 20%

**Correct choice: D Mineral matter 45%, Water 25%, Air 25% and organic matter 5%**

The correct soil composition is about 45% mineral matter, 25% water, 25% air, and 5% organic matter. This ratio supports good soil structure, aeration, and fertility. The other distributions do not match the standard soil profile.

**(vii) How is chemistry applicable in the agricultural sector?**

A It gives knowledge of fertilizer, pesticides and herbicides

B It enables the farmers to make use of tools, equipment and machines

C It helps farmers to practise animal breeding, controlling pest and diseases

D It enables farmers to estimate spacing dosage and size

E It enables farmers to determine price, profit and loss

**Correct choice: A It gives knowledge of fertilizer, pesticides and herbicides**

Chemistry is directly applied in agriculture through the development and use of fertilizers, pesticides, and herbicides. It provides farmers with the ability to improve soil fertility and control pests and diseases using chemical formulations. The other options belong to engineering, biology, or economics.

**(viii) Which implements are suitable for modification of land for crop plant growth?**

(i) Mouldboard plough

(ii) Disc plough

(iii) Harrow

(iv) Chisel plough

(v) Ridger

A (i), (ii) and (iv)

B (ii) and (iv)

C (ii), (iv) and (v)

D (iv) and (v)

E (iii), (iv) and (v)

**Correct choice: A (i), (ii) and (iv)**

Mouldboard plough, disc plough, and chisel plough are implements used for primary tillage, breaking and turning the soil for crop growth. A harrow is for secondary tillage (smoothing soil), and a ridger is for making ridges, not for general land modification.

**(ix) Which one is a group of organic materials that helps to maintain soil fertility?**

A Green manure, Farm yard manure and Nitrogen, Phosphorus and Potassium (NPK)

B Farm yard manure, Urea and Single Superphosphate (SSP)

C Farm yard manure, Compost and Calcium Ammonium Nitrate (CAN)

D Farm yard manure, Compost and Poultry manure

E Compost and Poultry manure and Diammonium Phosphate (DAP)

**Correct choice: D Farm yard manure, Compost and Poultry manure**

Organic materials are natural manures like compost, farmyard manure, and poultry manure. Fertilizers such as Urea, CAN, SSP, and DAP are inorganic, so they do not belong in the correct grouping.

**(x) The system of livestock farming where farmers travel from one place to another with their animals is referred as:**

A Zero grazing

B Tethering

C Rotational grazing

D Nomadic

E Continuous grazing

**Correct choice: D Nomadic**

Nomadic system involves farmers moving with their animals from place to place in search of water and pasture. Zero grazing confines animals indoors, tethering ties animals, rotational grazing moves animals between paddocks, and continuous grazing keeps animals in one area all the time.

**2. Match the description of breeding systems in List A with their corresponding breeding systems in List B by writing a letter of the correct response beside the item number in the answer booklet provided.**

| List A | List B |
|---|---|
| (i) Mating of more related animals.<br>(ii) Mating of animals that are more distantly related.<br>(iii) Mating exotic animals of different breeds.<br>(iv) Mating unrelated animals of the same breed.<br>(v) Mating of a crossbred animal back to the one of the pure parent races.<br>(vi) Mating between local breed (female) and exotic breed (male). | A Cross breeding<br>B Back crossing<br>C Inbreeding<br>D Outcrossing<br>E Fore crossing<br>F Up grading<br>G Continuous breeding<br>H Line breeding |

**ANSWERS:**

| List A | List B |
|---|---|
| (i) Mating of more related animals. | **C Inbreeding** |
| (ii) Mating of animals that are more distantly related. | **D Outcrossing** |
| (iii) Mating exotic animals of different breeds. | **A Cross breeding** |
| (iv) Mating unrelated animals of the same breed. | **H Line breeding** |
| (v) Mating of a crossbred animal back to the one of the pure parent races. | **B Back crossing** |
| (vi) Mating between local breed (female) and exotic breed (male). | **F Up grading** |

**3. 'Organic matter has significant effects on several soil properties.' Justify this statement by using nine points.**

Organic matter improves soil fertility because it supplies essential nutrients such as nitrogen, phosphorus, and sulfur. These nutrients are slowly released as organic matter decomposes, making them available for plant uptake and ensuring sustainable crop production.

It enhances soil structure by binding soil particles together to form stable aggregates. Good soil structure improves aeration and makes root penetration easier, which helps crops grow more vigorously.

Organic matter increases the water-holding capacity of soil, especially in sandy soils. This is important during dry seasons, as it ensures crops continue to get moisture even when rainfall is limited.

It promotes biological activity in the soil because it serves as food for microorganisms like bacteria, fungi, and earthworms. These organisms help in nutrient cycling, which further improves soil fertility.

Organic matter acts as a buffer against changes in soil pH. It reduces the harmful effects of acidity or alkalinity, thereby creating a favorable environment for crops to thrive.

It reduces soil erosion by improving the stability of soil aggregates. Stable soil is less likely to be washed away by water or blown away by wind. This protects the fertile topsoil needed for plant growth.

Organic matter enhances cation exchange capacity (CEC) of the soil. This allows the soil to hold more positively charged nutrients like potassium, calcium, and magnesium, which are vital for plant growth.

It contributes to carbon sequestration by storing carbon in the soil. This helps mitigate climate change while also improving soil productivity.

Organic matter reduces soil compaction by making the soil lighter and more friable. This improves root penetration, water infiltration, and overall crop performance.

**4. (a) Briefly explain the importance of pruning coffee plants. Give four points.**

Pruning helps to maintain the proper shape and size of the coffee plant. This makes it easier for farmers to carry out operations like spraying, harvesting, and weeding.

It encourages the growth of new productive branches that bear high-quality berries. Old, unproductive, or diseased branches are removed, allowing resources to be directed to healthy parts of the plant.

Pruning improves air circulation and sunlight penetration within the plant canopy. This reduces the risk of fungal diseases and enhances photosynthesis, which leads to better yields.

It prolongs the productive life of the coffee plant by rejuvenating it. Continuous removal of old branches ensures the plant remains vigorous and productive for many years.

**(b) Briefly explain five problems that hinder coffee production.**

Coffee production is hindered by pests and diseases such as coffee berry borer and coffee leaf rust. These reduce both the yield and quality of coffee beans.

Fluctuations in international coffee prices negatively affect farmers' income. Low prices discourage farmers from investing in proper care and management of their coffee plantations.

Inadequate access to inputs such as fertilizers and improved seedlings lowers production. Many smallholder farmers cannot afford the resources needed for maximum yields.

Climate change affects coffee production through unpredictable rainfall and rising temperatures. This leads to reduced productivity and sometimes complete crop failure.

Poor infrastructure, including inadequate processing facilities and bad rural roads, results in post-harvest losses and low market access for coffee farmers.

**5. In order to maximize production, farmers need to constantly add value to the available land. In what ways can this be achieved? Explain by giving six points.**

Farmers can add value by practicing crop rotation. This method improves soil fertility, prevents the build-up of pests and diseases, and ensures continuous productivity of land.

They can adopt intercropping, which allows two or more crops to grow together on the same piece of land. This ensures efficient use of nutrients, better pest control, and higher overall yields.

Irrigation can be introduced to ensure crops receive adequate water even during dry seasons. This extends the growing period and allows for multiple harvests per year.

The use of organic and inorganic fertilizers helps to replenish soil nutrients lost through continuous cultivation. Fertilizers improve soil fertility and boost crop yields significantly.

Farmers can practice agroforestry by integrating trees with crops and livestock. Trees provide shade, prevent erosion, and improve soil fertility through leaf litter.

Conservation practices such as terracing and mulching preserve the quality of the land. These prevent soil erosion, maintain soil moisture, and ensure long-term land productivity.

**6. Identify six features of a good farm workshop.**

A good farm workshop should have enough space to accommodate tools, machinery, and repair activities. Spacious workshops prevent accidents and make operations easier.

It should be well-ventilated and have good lighting. Adequate airflow and natural or artificial lighting make the workplace safer and more comfortable.

A good farm workshop must have essential tools and equipment such as spanners, hammers, welding machines, and grinders. These enable effective repair and maintenance of farm implements.

It should be located near the farm for easy access. Proximity reduces transport costs and ensures quick repairs when machinery breaks down during farm operations.

Proper storage facilities such as racks, shelves, and toolboxes should be present. These prevent loss, rusting, or damage to tools and equipment.

A good workshop must have skilled personnel who can operate, repair, and maintain farm equipment. Skilled labor ensures that breakdowns are managed efficiently and machines last longer.

**7. (a) Why most of the people in Tanzania keep chicken as a livestock of their choice? Give three points.**

People in Tanzania keep chicken because they require little capital to start. Chickens can be raised in small spaces and do not need expensive housing or feeding systems.

Chickens provide quick returns in the form of eggs and meat. Eggs can be collected daily, while broilers can be sold within a few months, giving farmers regular income.

Chickens are an important source of food and nutrition for households. They supply affordable protein, especially for rural families who cannot keep larger livestock.

**(b) Explain the problems facing poultry commercial farming industry in Tanzania. Give six points.**

Poultry farmers face high costs of feed. Feed makes up the largest part of production costs, and when prices rise, profitability falls sharply.

Diseases such as Newcastle and fowl pox are major challenges. They spread quickly and can wipe out large flocks if proper vaccination is not carried out.

Poor quality breeds reduce productivity. Farmers who rear local breeds without access to improved stock obtain fewer eggs and less meat compared to commercial breeds.

Inadequate veterinary services limit the ability of farmers to detect and control diseases. Many rural areas lack skilled veterinary officers.

Marketing challenges, including low prices and lack of organized markets, discourage farmers from investing heavily in poultry. Many sell their products at a loss.

Poor infrastructure, such as lack of electricity and cold storage facilities, causes high post-harvest losses. Eggs and meat spoil quickly without proper storage and transport.

**8. Describe the major stages that farmers would go through in marketing their farm produce.**

The first stage is harvesting, where crops or livestock products are collected at the right maturity or production stage. Proper harvesting ensures that the quality of the produce is maintained and reduces post-harvest losses.

The second stage is sorting and grading. Farmers separate produce according to size, quality, and appearance. Grading makes the produce more attractive to buyers and ensures higher market value.

The third stage is processing, where farm products are cleaned, packaged, or sometimes transformed into finished goods. For example, maize can be milled into flour, and milk can be processed into butter or cheese.

The fourth stage is storage. Farmers keep their produce in appropriate facilities to maintain freshness and avoid spoilage. Proper storage also allows them to wait for better prices before selling.

The fifth stage is transportation. Produce must be moved from farms to local or distant markets. Reliable transport ensures the goods reach buyers in good condition and at the right time.

The sixth stage is pricing. Farmers determine prices for their produce depending on production costs, market demand, and competition. Proper pricing ensures they get profit while staying competitive.

The final stage is selling. Farmers sell directly to consumers, through middlemen, or in cooperative societies. The selling process involves negotiation, contracts, or direct cash sales, depending on the system used.

**9. How can crop pests affect the quality and quantity of crops? Give six points.**

Crop pests reduce yield by directly feeding on crops. Insects like caterpillars, locusts, and weevils eat leaves, stems, and grains, causing massive losses in quantity.

They lower crop quality by damaging the appearance of produce. Fruits and vegetables attacked by pests often have holes, blemishes, or rot, making them unattractive to buyers.

Pests act as vectors of diseases. For example, aphids spread viral diseases in crops, which weakens plants and reduces both quality and quantity of harvest.

They increase post-harvest losses. Pests like storage weevils and rodents destroy grains in stores, leading to shortages and economic loss.

Pest infestations raise production costs since farmers must spend more money on pesticides, traps, and other control measures. This reduces profitability.

They discourage farmers from investing in crop production. Repeated losses due to pests lead to reduced morale and abandonment of farming activities.

**10. Farmers have reported poor germination of some crops seeds during the previous farming season. Account for six measures to take before planting to overcome the problem for the coming farming season.**

Farmers should test seed viability before planting. This ensures that only seeds with high germination rates are used, reducing the risk of poor crop establishment.

They should use certified and improved seeds from reliable suppliers. Certified seeds are free from contamination, diseases, and have higher chances of germination.

Seed treatment with chemicals or hot water should be done before planting. This helps kill pathogens and pests that may hinder germination.

Proper storage of seeds before planting is necessary. Seeds should be kept in cool, dry, and well-ventilated places to maintain their viability.

Farmers should prepare the land properly through ploughing, harrowing, and leveling. A well-prepared seedbed enhances seed-soil contact, which encourages germination.

They should plant at the right time and under suitable environmental conditions. Planting during the correct season ensures adequate moisture and temperature for seed germination.

**11. In six points, explain how a good livestock house can be constructed.**

A good livestock house should be built in a well-drained area to avoid waterlogging. This prevents dampness, which can cause diseases and discomfort to animals.

The house must be spacious enough to provide adequate room for each animal. Proper spacing prevents overcrowding, which reduces stress and the spread of diseases.

It should have good ventilation to allow free circulation of fresh air. Proper ventilation maintains healthy conditions by removing dust, heat, and harmful gases.

The floor should be strong, slightly sloped, and easy to clean. A sloped floor allows urine and water to drain away, while strong materials ensure durability and hygiene.

The house must be constructed using durable and locally available materials. This reduces building costs while ensuring the house lasts for many years under farm conditions.

It should include facilities such as feeding troughs, watering points, and bedding areas. These make it easier for farmers to manage the animals and ensure proper feeding and comfort.