

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
FORM TWO SECONDARY EDUCATION EXAMINATION
0034
AGRICULTURAL SCIENCE

Time: 2 Hours

ANSWERS

Monday 01st December 2014.

Instructions

1. This paper consists of Ten questions in section A and B.
2. Answer all questions.
3. All writings must be in **blue** or **black** ink.
4. Communication devices and any unauthorized materials are **not** allowed in the assessment room.
5. Write your **Examination Number** at the top right hand corner of every page.

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1. (i) All of the following are chemical weathering processes except

- A. Hydrolysis
- B. Expansion and contraction
- C. Acidification
- D. Oxidation and reduction reactions

Answer: B. Expansion and contraction

Reason: Expansion and contraction are physical weathering processes caused by temperature changes, while the other options are chemical processes involving reactions with water, acids, or oxidation.

(ii) One of the following groups of crops belongs to spice crops.

- A. Oranges and mangoes
- B. Ginger and cloves
- C. Beans and cowpea
- D. Wheat and barley

Answer: B. Ginger and cloves

Reason: Ginger and cloves are classified as spices used to flavor and preserve food, unlike the other options, which are fruits, legumes, or cereals.

(iii) Which one of the following is a social problem facing farmers in Tanzania?

- A. Traditionalism
- B. Scarcity of inputs
- C. Poor marketing facilities
- D. Seasonal rainfall

Answer: A. Traditionalism

Reason: Traditionalism refers to the resistance to adopting modern agricultural practices, which hinders agricultural productivity, a significant social issue in Tanzania.

(iv) Which one of the following is not a feature of a good farm workshop?

- A. It should contain basic tools.
- B. It should be orderly and systematic.
- C. It should be expensive with modern equipment.
- D. It should have ample room for working.

Answer: C. It should be expensive with modern equipment.

Reason: A good farm workshop does not need to be expensive; it only requires essential tools and an orderly setup.

(v) The price of a good is determined by

- A. Producers' will
- B. Method of production used
- C. Consumer income
- D. Inflation

Answer: C. Consumer income

Reason: The ability of consumers to afford goods is directly influenced by their income levels, which determines demand and consequently price.

(vi) Newcastle disease in poultry can be identified by

- A. Swollen wattles and combs
- B. Nasal discharge and swelling of the face
- C. Blood-stained faeces
- D. Birds walk backward hiding their heads with neck twisted

Answer: D. Birds walk backward hiding their heads with neck twisted

Reason: This is a distinctive symptom of Newcastle disease caused by a viral infection in poultry.

(vii) All of the following are physical procedures of processing agricultural produce except

- A. Salting
- B. Extraction
- C. Evaporation of water
- D. Grading

Answer: A. Salting

Reason: Salting is a chemical process for preservation, unlike the other options, which are physical processes.

(viii) The instrument which is used for driving in and removing nails in woodwork is known as

- A. Ball-pein hammer
- B. Claw hammer
- C. Cross-pein hammer
- D. Metal hammer

Answer: B. Claw hammer

Reason: The claw hammer has a claw specifically designed for pulling out nails.

(ix) Soil structure is determined by

- A. Colour of the soil
- B. Size of the soil particles
- C. Shape of the soil particles
- D. Particle density of the soil

Answer: C. Shape of the soil particles

Reason: The shape and arrangement of soil particles determine the soil structure, affecting aeration and water infiltration.

(x) Quick and immediate attention that one receives after an accident in agricultural laboratory before taken to hospital is known as

- A. Treatment
- B. Preventive measure
- C. First aid
- D. Safety precaution

Answer: C. First aid

Reason: First aid is the immediate care provided to an injured person before professional medical help is available.

2. Match the items in List A with those in List B by writing the letter of the correct answer below the corresponding item number in the table provided.

List A

- (i) Cuts wood grains in any direction
- (ii) Makes grooves on wood
- (iii) Smoothens surfaces in wood
- (iv) Fastens together small pieces of timber
- (v) Drives in wood chisel
- (vi) Drives nails into wood and removes nails from wood
- (vii) Drills holes in wood
- (viii) Indicates the parallel lines along the edge of wood for cutting
- (ix) Drives screws in and out of wood surfaces
- (x) Smoothens round surfaces of wood

List B

- A. Mallet
- B. Rasp
- C. Marking gauge
- D. Brace and bit
- E. Hack saw
- F. Ball-pein hammer
- G. Tenon saw
- H. Jack plane
- I. Try square
- J. Anvil
- K. Scraper
- L. G clamp
- M. Wood chisel
- N. Claw hammer

Answers

- (i) E
- (ii) B
- (iii) H
- (iv) L
- (v) A
- (vi) N
- (vii) D
- (viii) C

- (ix) F
- (x) K

3. For each of the following statements, write TRUE for a correct statement or FALSE if a statement is not correct.

- (i) The non-solid spaces in the soil are called pore spaces. TRUE
- (ii) The first step in agricultural investigation procedure is problem identification. TRUE
- (iii) Agricultural economics is the study of the economy as a whole. FALSE
- (iv) In welding, metal parts are joined by means of a fusible alloy. TRUE
- (v) Building suitable housing for livestock is one of the general principles of livestock production. TRUE
- (vi) Weeds have both beneficial and harmful effects to crop plants. TRUE
- (vii) Capital is a factor of production which results from accumulation of assets. TRUE
- (viii) Concentrates are indigestible feeds with high nutritive value. FALSE
- (ix) One of the objectives of processing agricultural products is to make their handling easier. TRUE
- (x) Soil formation is the evolution of the soil from the consolidated bedrock. TRUE

4. (a) (i) Define the term 'agriculture'.

Agriculture is the practice of cultivating soil, growing crops, and rearing animals for food, fiber, and other products used to sustain human life.

(ii) Why is agriculture considered to be a science?

Agriculture is considered a science because it involves the systematic application of scientific principles and techniques to improve crop production, livestock management, and soil conservation. It uses disciplines like biology, chemistry, and technology to optimize productivity and sustainability.

(b) Outline six roles of agriculture in the economy of Tanzania.

- (i) Provides employment opportunities for the majority of the population.
- (ii) Acts as a source of food for domestic consumption and export.
- (iii) Supplies raw materials to agro-industries.
- (iv) Contributes significantly to foreign exchange earnings through exportation of agricultural products.
- (v) Enhances rural development through income generation and infrastructure improvement.
- (vi) Acts as a source of government revenue through taxes and levies on agricultural products.

5. (a) What is the importance of safety precautions in the farm workshop?

Safety precautions in the farm workshop are essential to prevent accidents, protect workers from injuries, and ensure the proper handling and maintenance of tools and equipment for efficiency and durability.

(b) State three safety precautions in each of the following areas:

(i) Housekeeping.

- Keep the workshop clean and free from debris.
- Ensure tools are stored in their proper places after use.
- Maintain proper lighting and ventilation in the workshop.

(ii) Personal protection against injury.

- Wear protective gear such as gloves, goggles, and helmets.
- Avoid loose clothing or jewelry that may get caught in machinery.
- Follow instructions and guidelines when operating tools and equipment.

(iii) Protection against fire hazards.

- Install fire extinguishers and ensure they are easily accessible.
- Avoid storing flammable materials near heat sources.
- Regularly inspect electrical systems and connections for faults.

6. (a) (i) What is meant by horticulture?

Horticulture is the branch of agriculture that focuses on the cultivation of fruits, vegetables, flowers, and ornamental plants.

(ii) Give the importance of horticultural products in the diet of human beings.

- Provide essential vitamins and minerals for a balanced diet.
- Serve as a source of dietary fiber, promoting digestion.
- Act as antioxidants, reducing the risk of chronic diseases.

(b) Briefly explain six cultural practices to be observed when growing vegetables in the garden.

- (i) Proper land preparation to ensure good drainage and root penetration.
- (ii) Timely planting to align with favorable weather conditions.
- (iii) Regular weeding to reduce competition for nutrients and light.
- (iv) Application of organic and inorganic fertilizers to enhance soil fertility.
- (v) Proper spacing of plants to allow sufficient air circulation and sunlight.
- (vi) Mulching to conserve soil moisture and suppress weed growth.

7. (a) Define the following terms:

(i) Ration: A ration refers to the amount of feed provided to an animal over a 24-hour period to meet its nutritional requirements.

(ii) Balanced ration: A balanced ration is a diet that contains all the essential nutrients such as carbohydrates, proteins, fats, vitamins, and minerals in the right proportions needed for the animal's maintenance, growth, and production.

(iii) Production ration: A production ration is the portion of an animal's diet specifically formulated to meet the nutritional requirements for producing milk, eggs, meat, or other outputs.

(iv) Maintenance ration: A maintenance ration is the amount of feed required to sustain an animal's basic life processes, such as breathing and digestion, without gaining or losing weight.

(b) (i) Differentiate between hay and silage.

Hay is dried and stored fodder made from grasses or legumes, while silage is fermented and stored fodder made from green crops like maize or sorghum.

(ii) Outline four steps in making hay.

- Cut the grass or legumes at the appropriate maturity stage.
- Dry the cut material in the sun to reduce moisture content.
- Turn the material frequently to ensure uniform drying.
- Store the dried hay in a well-ventilated area to prevent mold growth.

(iii) Briefly explain the importance of conserving fodder.

Conserving fodder ensures a continuous supply of animal feed during periods of feed scarcity, such as drought or winter. It helps maintain livestock health and productivity throughout the year.

8. (a) Give the meaning of the following:

(i) Price: Price refers to the amount of money that must be paid to acquire a good or service.

(ii) Supply: Supply is the quantity of a good or service that producers are willing and able to offer for sale at a given price and time.

(iii) Demand: Demand is the quantity of a good or service that consumers are willing and able to purchase at a given price and time.

(b) (i) Briefly explain how taxation determines the price of an agricultural good.

Taxation increases the production cost, which producers often pass on to consumers, raising the price of the agricultural good.

(ii) Name five factors affecting the demand for an agricultural good.

- Price of the good.
- Consumer income.
- Consumer preferences.
- Price of substitute goods.
- Population growth and demographic changes.

9. (a) (i) What is soil?

Soil is the top layer of the earth's surface, composed of organic and inorganic materials, air, water, and microorganisms, which supports plant growth.

(ii) Show the distribution of soil components by volume.

- Mineral particles: 45%
- Organic matter: 5%
- Air: 25%
- Water: 25%

(b) State five factors that influence soil formation.

- Parent material.
- Climate.
- Topography.
- Biological activity.
- Time.

10. (a) Differentiate the following:

(i) Interplanting and monocropping: Interplanting involves growing different crops in the same field simultaneously, while monocropping is the practice of growing only one type of crop in a field.

(ii) Mixed cropping and intercropping: Mixed cropping is growing two or more crops together without a specific arrangement, while intercropping involves growing two or more crops in a systematic arrangement.

(b) (i) What is meant by crop rotation?

Crop rotation is an agricultural practice of growing different types of crops in the same field in a planned sequence to improve soil fertility and reduce pest and disease buildup.

(ii) Enumerate five advantages of crop rotation.

- Enhances soil fertility.
- Reduces soil erosion.
- Breaks pest and disease cycles.
- Improves soil structure.
- Maximizes the use of nutrients.