

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) Cutting, threading, and fitting of pipes is known as
- A. soldering
 - B. plumbing
 - C. forging
 - D. welding

Answer: B (plumbing)

Reason: Plumbing involves the installation, maintenance, and fitting of pipes for water systems or drainage systems.

- (ii) All of the following are draught animals except
- A. Oxen
 - B. Donkey
 - C. Camel
 - D. Giraffe

Answer: D (Giraffe)

Reason: Giraffes are wild animals and are not domesticated or used for pulling heavy loads, unlike oxen, donkeys, and camels.

- (iii) Which one of the following is a forest crop grown in Tanzania?
- A. Tea
 - B. Pyrethrum
 - C. Timber
 - D. Cocoa

Answer: C (Timber)

Reason: Timber is commonly harvested from forests in Tanzania, whereas tea, pyrethrum, and cocoa are agricultural crops.

- (iv) The joining of a small piece of shoot to a shoot containing a root system with good characteristics is referred to as
- A. grafting
 - B. layering
 - C. budding
 - D. cutting

Answer: A (grafting)

Reason: Grafting involves attaching a shoot (scion) to a rootstock of another plant to combine desirable traits of both plants.

(v) Which compartment in a ruminant stomach is considered to be a true stomach?

- A. Rumen
- B. Reticulum
- C. Abomasum
- D. Omasum

Answer: C (Abomasum)

Reason: The abomasum is the compartment in a ruminant's stomach that functions similarly to the true stomach in monogastric animals, where enzymatic digestion occurs.

(vi) The feed nutrient essential as structural constituents of the animal body are

- A. Carbohydrates
- B. Proteins
- C. Vitamins
- D. Mineral salts

Answer: B (Proteins)

Reason: Proteins are necessary for the development and repair of tissues and serve as building blocks for the animal's body structure.

(vii) One of the factors that cause change in demand of an agricultural good is

- A. Changes in income of consumers
- B. Changes in the costs of production
- C. Occurrence of pests and diseases
- D. Changes in weather condition

Answer: A (Changes in income of consumers)

Reason: When consumers' income increases, they tend to purchase more or higher-quality goods, thereby affecting demand.

(viii) The factor of production that enables effective utilization of other factors is

- A. land
- B. capital
- C. entrepreneurship
- D. labour

Answer: C (entrepreneurship)

Reason: Entrepreneurship coordinates land, capital, and labor, driving innovation and ensuring efficient utilization of these resources.

(ix) Which one of the following is not true about soil?

- A. It is the weathered part of the earth's crust.
- B. It is the upper layer of the earth's crust.

- C. Contains five percent water.
- D. Contains plant and animal remains.

Answer: C (Contains five percent water)

Reason: Soil can contain varying amounts of water, depending on its composition and environmental conditions, not necessarily five percent.

(x) Which one of the following soil properties is not influenced by the soil structure?

- A. Aeration
- B. Water movement
- C. Colour
- D. Porosity

Answer: C (Colour)

Reason: Soil color is determined by its mineral composition and organic matter content, not by its structure.

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) Cereal crop
- (ii) Oil crop
- (iii) Beverage crop
- (iv) Legume crop
- (v) Root crop
- (vi) Fruit crop
- (vii) Medicinal crop
- (viii) Spice crop
- (ix) Forage crop
- (x) Ornamental crop

List B:

- A. Lucerne pea
- B. Pigeon pea
- C. Pawpaw
- D. Sugarcane
- E. Paddy
- F. Bourgainvillia
- G. Tea
- H. Cyprus
- I. Pyrethrum
- J. Okra

K. Sunflower
L. Rubber
M. Ginger
N. Cabbage
O. Cassava

Answers:

- (i) E (Paddy)
- (ii) K (Sunflower)
- (iii) G (Tea)
- (iv) B (Pigeon pea)
- (v) O (Cassava)
- (vi) C (Pawpaw)
- (vii) I (Pyrethrum)
- (viii) M (Ginger)
- (ix) A (Lucerne pea)
- (x) F (Bourgainvillia)

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

(i) Agriculture can be regarded as a science as it involves application of human skills which can be manipulated. TRUE

(ii) In scientific investigation procedures, acceptance or rejection of the hypothesis is done in data analysis. TRUE

(iii) Tenon saw is used for cutting wood grains in many directions. FALSE

(iv) Intercropping is the growing of two or more crops on the same piece of land at random. TRUE

(v) The system of rearing poultry in which sawdust is spread on the floor of the house where birds are kept is known as deep litter system. TRUE

(vi) B horizons in a soil profile are characterized by accumulation of materials. TRUE

(vii) Inelastic supply occurs when the quantity of goods supplied changes by a smaller percentage than the price. TRUE

(viii) Silage is a livestock fodder which is stored while it is still in a green moist state. TRUE

(ix) Herbicides are chemicals used to kill weeds. TRUE

(x) Soil structure is the relative proportions of soil particles of different diameters in the soil. FALSE

4. (a) Give the name of the pipe fitting that is used for each of the following purposes in plumbing.

- (i) Branching off the main pipeline: Tee joint
- (ii) Changing direction of run of a pipe: Elbow joint
- (iii) Connecting pipes in a straight line: Coupler
- (iv) Connecting two fittings: Adapter
- (v) Connecting two pieces of pipes where either one can be turned or where part of a system needs to be removed for repair or replacement: Union

(b) State the function of each of the following tools used in woodwork.

- (i) Cross-cut saw: Used to cut wood across the grain.
- (ii) Jack plane: Used to smooth and flatten wooden surfaces.
- (iii) Chisel: Used for carving, cutting, and shaping wood.
- (iv) Hammer: Used for driving nails, fitting parts, and breaking objects.
- (v) Brace: Used for drilling holes in wood or other materials.

5. (a) Define the term "crop pest."

A crop pest is any organism, such as insects, rodents, nematodes, fungi, bacteria, or weeds, that attacks and causes damage to crops, leading to reduced yield and quality.

(b) Outline two advantages and four disadvantages of chemical methods in controlling pests.

Advantages:

- (i) They are fast and effective in killing pests.
- (ii) They can be used to control a wide variety of pests.

Disadvantages:

- (i) They may cause environmental pollution.
- (ii) Pests can develop resistance over time.
- (iii) They may harm non-target organisms, such as beneficial insects.
- (iv) Improper use can lead to health hazards for humans and animals.

(c) Give four suitable properties for the chemical to be used to control pests.

- (i) It should be biodegradable.
- (ii) It should target specific pests without harming non-target organisms.
- (iii) It should be safe for humans and animals.
- (iv) It should be effective at low concentrations.

6. (a) Differentiate between natural and artificial brooding.

Natural brooding involves a mother hen incubating and rearing her chicks, providing warmth and protection. Artificial brooding uses equipment such as brooders, heaters, or lamps to provide warmth and care for chicks without a mother hen.

(b) Briefly explain four problems of the free-range system in rearing poultry.

- (i) Poultry are exposed to predators, reducing their survival rate.
- (ii) Birds may spread and contract diseases easily.
- (iii) They are more likely to face adverse weather conditions.
- (iv) It is challenging to monitor and control feeding, leading to inconsistent growth rates.

7. (a) Define the following terms:

(i) Nomadic pastoralism: A form of animal husbandry where herders move with their livestock from one place to another in search of water and pasture.

(ii) Shifting cultivation: An agricultural system where farmers clear a piece of land, cultivate crops for a few years, and then leave it to recover its fertility while moving to another area.

(b) Outline six disadvantages of nomadic pastoralism:

- (i) Overgrazing leading to land degradation.
- (ii) Limited access to modern education and healthcare for herders.
- (iii) Conflict over grazing land and water resources.
- (iv) Vulnerability to drought and climate changes.
- (v) Low productivity of livestock due to lack of consistent veterinary services.
- (vi) Spread of animal diseases due to constant movement.

8. (a) (i) What is a factor of production?

A factor of production refers to the resources or inputs used to produce goods and services, including land, labor, capital, and entrepreneurship.

(ii) Briefly describe three characteristics of land as a factor of production:

- (i) Fixed supply: Land cannot be increased or decreased.
- (ii) Immobility: Land is fixed in location and cannot be moved.
- (iii) Natural resource: Land is a natural endowment and not man-made.

(b) (i) Who is an entrepreneur?

An entrepreneur is an individual who organizes, manages, and assumes the risks of a business or enterprise with the aim of making a profit.

(ii) Give five roles of entrepreneurship as a factor of production:

- (i) Creating employment opportunities.
- (ii) Introducing innovations and technological advancements.

- (iii) Organizing and combining other factors of production.
- (iv) Contributing to economic growth and development.
- (v) Taking financial risks to generate profits.

9. (a) (i) Define the term 'soil profile':

A soil profile is a vertical section of the soil that shows its different layers or horizons, each with distinct physical and chemical characteristics.

(ii) Mention four horizons found in a soil profile and state their characteristics:

- (i) Horizon O: Organic layer rich in decomposed plant and animal matter.
- (ii) Horizon A: Topsoil with high organic content and nutrients for plant growth.
- (iii) Horizon B: Subsoil containing minerals and nutrients leached from the upper layers.
- (iv) Horizon C: Parent material consisting of weathered rock fragments.

(b) Name the three solid particles of the soil:

- (i) Sand
- (ii) Silt
- (iii) Clay

(c) State two functions of living organisms in the soil:

- (i) Decomposition of organic matter to release nutrients.
- (ii) Aeration of the soil through burrowing activities.

10. (a) Briefly explain the function of each of the following garden tools:

- (i) Wheelbarrow: Used for transporting soil, manure, and other materials in the garden.
- (ii) Sprinkler: Used for watering plants by evenly distributing water.
- (iii) Hose pipe: Used for directing water to specific areas of the garden.
- (iv) Garden shear: Used for pruning and shaping plants.
- (v) Secateur: Used for cutting small branches and twigs.

(b) Name the garden tool responsible for each of the following functions:

- (i) Watering seedlings in nursery beds and transplanted seedlings: Watering can
- (ii) Preparing planting furrows and holes: Hoe
- (iii) Removing underground perennial weeds: Forked hoe
- (iv) Collecting together uprooted plant roots and stems: Rake
- (v) Clearing the land of small trees and shrubs before cultivation: Machete