

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND VOCATIONAL TRAINING
FORM TWO SECONDARY EDUCATION EXAMINATION, 2013

0034

AGRICULTURAL SCIENCE

Time: 2 Hours

ANSWERS

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

- (i) When a student is physically injured, the first step is to rush him/her to hospital. FALSE
- (ii) The purpose of smearing grease or oil on metal surfaces of farm tools is to make them sharp. FALSE
- (iii) In poultry husbandry, toe pecking and cannibalism are desirable poultry habits. FALSE
- (iv) Mixed cropping is the action of growing crops and keeping farm animals at the same time. TRUE
- (v) Land as a factor of production includes all natural resources that are found in a certain place. TRUE
- (vi) The largest proportion of the soil volume is mineral matter. FALSE
- (vii) Most fruits are canned because they are perishable. TRUE
- (viii) Ruminant farm animals like cows, goats, and sheep have four stomach chambers. TRUE
- (ix) Early crop planting is one of the mechanical methods of weed control. TRUE
- (x) In farming business economics, prices of commodities are determined by the forces of supply and demand. TRUE

2. Match the items in Set A with those in Set B by writing the correct letter below the corresponding question number in the table provided.

Set A

- (i) A chemical used to kill weeds in crop fields
- (ii) A cow purposely kept for meat production
- (iii) Graphical representation of the quantity of goods bought at different prices
- (iv) Identification of fertile poultry eggs
- (v) Leguminous crops
- (vi) Major factor affecting livestock distribution in Tanzania
- (vii) Power generated from water
- (viii) Production of crops for food or sale
- (ix) Useful for retaining soil moisture, regulating soil temperature, and suppressing weeds
- (x) Vertical arrangement of soil horizons

Set B

- A. Arable farming
- B. Beans and pigeon peas

- C. Beef cattle
- D. Candling
- E. Climate
- F. Dairy cattle
- G. Demand curve
- H. Herbicides
- I. Hydro power
- J. Insecticides
- K. Maize and wheat
- L. Mulching
- M. Soil porosity
- N. Soil profile
- O. Solar power
- P. Supply curve

Answers

- (i) H. Herbicides
- (ii) C. Beef cattle
- (iii) G. Demand curve
- (iv) D. Candling
- (v) B. Beans and pigeon peas
- (vi) E. Climate
- (vii) I. Hydro power
- (viii) A. Arable farming
- (ix) L. Mulching
- (x) N. Soil profile

3. Write the letter of the correct answer in the box provided for each question, with reasons:

(i) Which of the following animal feeds are concentrates?

- A. Cotton seed cake and maize meal
- B. Lucerne and maize bran
- C. Rice bran and sorghum straw
- D. Wheat bran and elephant grass

Answer: A. Concentrates are rich in nutrients and low in fiber. Cotton seed cake and maize meal are examples of energy and protein-rich concentrates.

(ii) The process whereby farm animals bring back to the mouth the swallowed curds for further chewing is termed as:

- A. Assimilation
- B. Digestion
- C. Regurgitation
- D. Vomiting

Answer: C. Regurgitation is the process where animals, especially ruminants, bring swallowed food back to the mouth for further chewing.

(iii) A pattern of cropping where seeds are planted in a specific and systematic spacing is known as:

- A. Broadcasting
- B. Crop rotation
- C. Interplanting
- D. Row planting

Answer: D. Row planting ensures systematic spacing between seeds, allowing efficient use of space and resources.

(iv) The practice of resting a piece of land for the purpose of fertilizing it is called:

- A. Fallowing
- B. Farrowing
- C. Intercropping
- D. Monocropping

Answer: A. Fallowing involves leaving land uncultivated to restore soil fertility naturally.

(v) The pore space of the soil body is usually filled with:

- A. Air
- B. Air and water
- C. Mineral matter
- D. Organic matter

Answer: B. Soil pores typically hold a mixture of air and water, critical for plant growth and microbial activity.

(vi) Which of the following practices will you use to hammer a piece of metal into a shape of your choice?

- A. Forging
- B. Hack-sawing
- C. Soldering
- D. Welding

Answer: A. Forging involves shaping metal using compressive forces, such as hammering.

(vii) Which of the following tractor engine parts make a rotary motion?

- A. Crank shaft
- B. Cylinders
- C. Oil sump
- D. Piston

Answer: A. The crankshaft converts the piston's linear motion into rotary motion, which powers the tractor.

(viii) According to a system used by the International Society of Soil Science, soil particles are classified according to their:

- A. Diameters

- B. Porosities
- C. Structures
- D. Textures

Answer: A. Soil particles are categorized based on their diameter, such as sand, silt, and clay.

(ix) The recommended grazing system in areas with high population densities is:

- A. Continuous grazing
- B. Rotational grazing
- C. Tethering
- D. Zero grazing

Answer: D. Zero grazing involves confining animals and feeding them in one place, suitable for high-density areas.

(x) The weakness of human beings as sources of farm power is:

- A. May fall sick during farming seasons
- B. They are naturally lazy and subject to social problems
- C. They get tired and their ability to supply power is limited
- D. They need food and their ability to supply power is unlimited

Answer: C. Humans are limited as farm power sources because they get tired and cannot work continuously without rest.

4. Name an instrument or tool which you can use in performing the following farm operations:

(a) Turning the soil, making ridges, weeding, and uprooting stumps.

- Hoe

(b) Levelling the soil, removing stones and weeds.

- Rake

(c) Turning and spreading manure.

- Fork jembe

(d) Digging shallow holes and transplanting seedlings.

- Hand trowel

(e) Trimming hedges.

- Hedge shears

(f) Harvesting cereals and cutting grass.

- Sickle

(g) Watering seedlings.

- Watering can

(h) Sawing wood along the grain.

- Saw

(i) Cutting and shaping cold metals.

- Chisel

(j) Connecting pipes in a straight line.

- Pipe wrench

5. (a) Define the term "Soil" as applied to agriculture.

Soil is the uppermost layer of the earth's crust that supports plant growth and is composed of mineral particles, organic matter, water, and air.

(b) Outline five types of soil which are found in Tanzania Mainland.

(i) Sandy soil

(ii) Clay soil

(iii) Loamy soil

(iv) Silt soil

(v) Peaty soil

(c) List four factors that influence soil formation.

(i) Parent material

(ii) Climate

(iii) Topography

(iv) Biological factors

6. Briefly explain five reasons as to why peasants in villages prefer the free-range poultry rearing system to other systems.

(i) It is cost-effective since it does not require expensive infrastructure.

(ii) Birds can forage for food, reducing feeding costs.

(iii) It allows birds to exhibit natural behavior, improving their well-being.

(iv) It requires minimal management skills, making it suitable for rural farmers.

(v) It produces healthier and tastier poultry products due to natural feeding.

7. (a) Define each of the following terms:

(i) Price

Price is the amount of money required to purchase a good or service.

(ii) Price fluctuation

Price fluctuation refers to the changes in the price of goods or services over time due to market forces.

(iii) Equilibrium price

Equilibrium price is the price at which the quantity of goods demanded equals the quantity supplied.

(iv) Capital

Capital refers to financial resources or assets used to start or operate a business.

(v) Asset

An asset is any valuable item or resource owned by an individual or organization.

(b) Outline five types of price fluctuations.

(i) Seasonal price fluctuation

(ii) Cyclical price fluctuation

(iii) Short-term price fluctuation

(iv) Long-term price fluctuation

(v) Random price fluctuation

8. (a) What is crop rotation?

Crop rotation is the practice of growing different types of crops in a specific sequence on the same piece of land to improve soil fertility and reduce pests and diseases.

(b) Give one reason for each of the following crop rotation principles:

(i) Shallow-rooted crops should be rotated with deep-rooted crops.

This helps in efficient utilization of soil nutrients at different depths.

(ii) Heavy feeders should be rotated with light feeders.

This prevents the depletion of specific soil nutrients.

(iii) Crops with different families should be rotated.

This reduces the buildup of crop-specific pests and diseases.

(iv) Legumes should be included in the rotation.

Legumes fix nitrogen in the soil, improving its fertility.

9. (a) Which type of tractor plough will you recommend for each of the following soil conditions:

(i) Soft and free of roots and rocks.

Disc plough

(ii) Rough and stony grounds.

Mouldboard plough

(iii) Compacted and impermeable soil layers.

Chisel plough

(b) Name an instrument which is used to perform each of the following farm operations:

(i) Holding hot metals.

Tongs

(ii) Measuring squareness of two surfaces.

Try square

(iii) Carrying manure, soil, and concrete mixture in the farm.

Wheelbarrow

(iv) Spreading water during irrigation.

Sprinkler

10. Outline five problems facing agriculture in Tanzania.

(i) Inadequate access to modern farming technology.

Many farmers in Tanzania rely on traditional tools and methods, which are less efficient compared to modern technology. This limits productivity and increases labor intensity, making agriculture less profitable and sustainable.

(ii) Unreliable rainfall and adverse climate changes.

Agriculture in Tanzania heavily depends on rainfall, and irregular rainfall patterns or prolonged droughts significantly affect crop yields and livestock production. Climate change has further worsened the situation by causing unpredictable weather patterns.

(iii) Poor infrastructure for transporting agricultural produce.

Many rural areas lack proper roads, storage facilities, and market access. This leads to high post-harvest losses as farmers cannot transport their produce to markets in time or store it under proper conditions.

(iv) Limited access to agricultural loans and financing.

Farmers face challenges in accessing financial support due to stringent loan requirements or high-interest rates. This limits their ability to invest in improved seeds, fertilizers, equipment, and other inputs necessary for better productivity.

(v) Pests and diseases affecting crops and livestock.

Crop pests like locusts and diseases such as cassava mosaic virus, as well as livestock diseases like foot-and-mouth disease, significantly reduce yields and livestock quality. The lack of adequate pest control measures and veterinary services exacerbates the problem.