

**THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**

034/1

**AGRICULTURAL SCIENCE 1**  
*(For School Candidates only)*

**Time: 2 Hours 30 Minutes**

**Friday November 12, 2004 p.m.**

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***Instructions***

1. This paper consists of sections A, B and C.
2. Answer **all** questions in sections A and B and **one (1)** question from section C.
3. Cellular phones are **not** allowed in the examination room.
4. Electronic calculators are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

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## SECTION A (20 Marks)

Answer **all** questions in this section.

1. For each of the items (i) - (x), choose the correct answer among the given alternatives and write its letter beside the item number.
- (i) A wood preservative may be applied on wood by all the following non-pressure processes **except**
- A brushing
  - B spraying
  - C dipping
  - D bettle
  - E steeping.
- (ii) Which of the following is a heavy breed of poultry?
- A Black leghorn
  - B Minorea
  - C Brown leghorn
  - D Light sussex
  - E Large white.
- (iii) *Camellia sinensis* is a botanical name for
- A coffee
  - B pyrethrum
  - C tobacco
  - D sisal
  - E tea.
- (iv) A soil sample weighs 1.325 g and its volume is  $0.7 \text{ cm}^3$ . The volume of air and moisture in this soil sample is  $0.2 \text{ cm}^3$ . this means that its Particle Density (PD) in  $\text{g/cm}^3$  is
- A 1.325
  - B 1.470
  - C 1.61
  - D 1.89
  - E 2.65.
- (v) The following are carpentry tools **except**
- A chisel
  - B ripsaw
  - C hacksaw
  - D jack plane
  - E mallet.

- (vi) Which of the following is the most effective way of controlling Foot and Mouth Diseases (FMD) in livestock?
- A Rotational grazing
  - B Drenching
  - C Paddockding
  - D Dipping
  - E Quarantine.
- (vii) The following chemical is used for dusting cereals and legumes during storage:
- A Permethrin
  - B Aldrin
  - C Sevin
  - D Thiram
  - E Thiodan.
- (viii) During the process of chain surveying, the lines which are measured perpendicular to the chain line are known as
- A traverses
  - B coordinates
  - C diagonals
  - D off-sets
  - E triangulations.
- (ix) When there are several firms selling a similar product and each of such firms sells a large share of the total output, the competition and price formation which will result is known as
- A monopsony
  - B monopoly
  - C oligopoly
  - D elasticity
  - E pure competitive price.
- (x) The following type of irrigation is most suitable where land is too steep, soils very permeable and topography uneven:
- A trickle irrigation
  - B surface irrigation
  - C furrow irrigation
  - D sprinkler irrigation
  - E drip irrigation.

2. Match the responses in **List B** with the words/phrases in **List A** by writing the letter of the correct response beside the item number.

**LIST A**

- (i) Essential element for the formation of chlorophyll in plants
- (ii) Method of controlling price fluctuations of agricultural products
- (iii) A variety of tomatoes
- (iv) Survey instrument for levelling
- (v) Mechanical method of controlling soil erosion
- (vi) Ruminants
- (vii) A device fixed onto oxen to facilitate ox-ploughing
- (viii) A grass weed
- (ix) An acute infectious disease of ruminants
- (x) Lives in fresh water

**LIST B**

- A *Cyperus rotundus*
- B *Pennisetum* spp
- C Sheep, goats, cattle
- D Pigs, goats, cattle
- E *Tilapia* spp
- F Star fish
- G Skey
- H Couter
- I Blackquarter
- J Newcastle
- K Magnesium
- L Phosphorus
- M Afforestation
- N Contour ridging
- O Jamaica
- P Roma VF
- Q Government regulations
- R Buffer stock fund
- S Odometer
- T Theodolite

**SECTION B (60 Marks)**

Answer **all** questions in this section. The answers should be brief, precise and to the point.

3. (a) What is a crop pest?
- (b) State **one (1)** of the most effective ways of controlling each of the following pests of the named crop in the field.
- (i) Thrips on onions
  - (ii) Citrus aphids on oranges
  - (iii) Stalk borers on maize
  - (iv) Mealy bugs on cassava. **(9 marks)**
4. (a) (i) What do you understand by the term ‘surveying’ as is used in land planning?
- (ii) State **three (3)** purposes of surveying
- (b) Mr. Kalunde wants to know the elevation of his farm from sea level, the reference being a nearby benchmark.
- (i) What type of surveying technique will you advise for the farmer to use?
  - (ii) Suggest **four (4)** surveying instruments to be used by Mr. Kalunde in the surveying technique named in 4. (b)(i) above. **(8 marks)**

5. The price of beans at Mbuyuni market rises from shs 500.00 per kg in April to shs 800.00 per kg in December. The demand of beans remains constant at 5,000 kg per day.
- (a) (i) Calculate the elasticity of demand  
 (iii) Identify the elasticity calculated in 5. (a)(i) above.
- (b) Sketch the graph for this type of demand elasticity. **(9 marks)**
6. The diagrams in figure 1 below represent the engine strokes of a farm tractor.

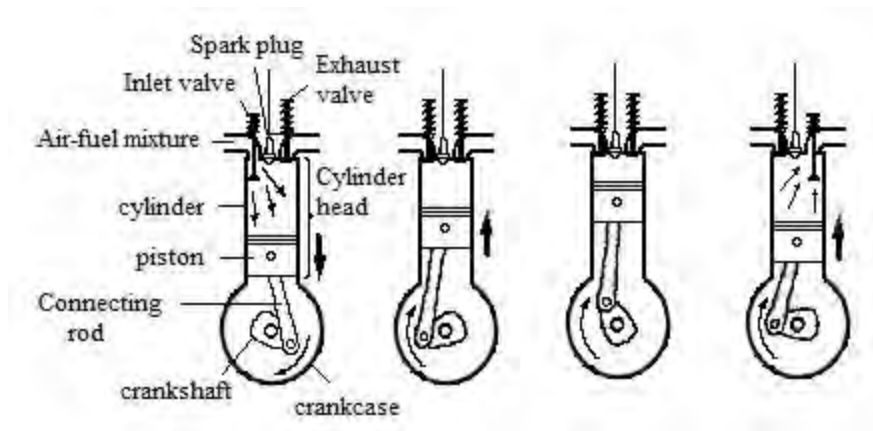


Fig. 1

- (a) Give the name of each stroke in A, B, C and D.
- (b) (i) State whether the diagrams above represent diesel or petrol engine parts. Give a reason.  
 (ii) A carburettor and injector pump are both sold in the nearby shop. Which one will you buy for the tractor engine identified in 6. (b)(i) above? **(4 marks)**
7. (a) The following diagrams (Figure 2) show a top view of two types of cattle. Which diagram represents:  
 (i) dairy cattle  
 (ii) beef cattle

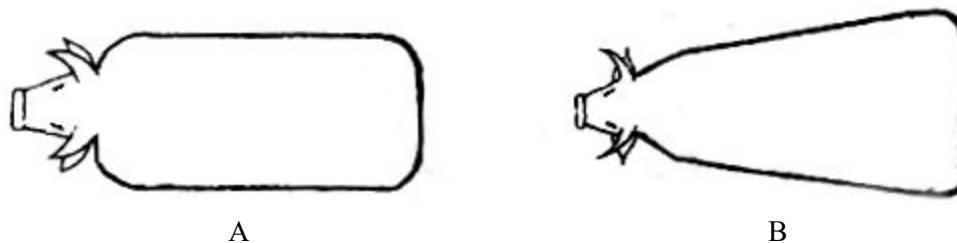


Fig. 2

- (b) (i) Outline **six (6)** desirable characteristics of dairy cattle  
 (ii) Give the name of a dairy cattle breed with the following characteristics:

Heavily built with short legs, weighs 400 kg when mature, has a large and pendulous udder with long thick teats, a difficult milker and does not let its milk easily. **(9 marks)**

8. The diagram below (Figure 3) represents a soil profile with its horizons A, B, C and D.

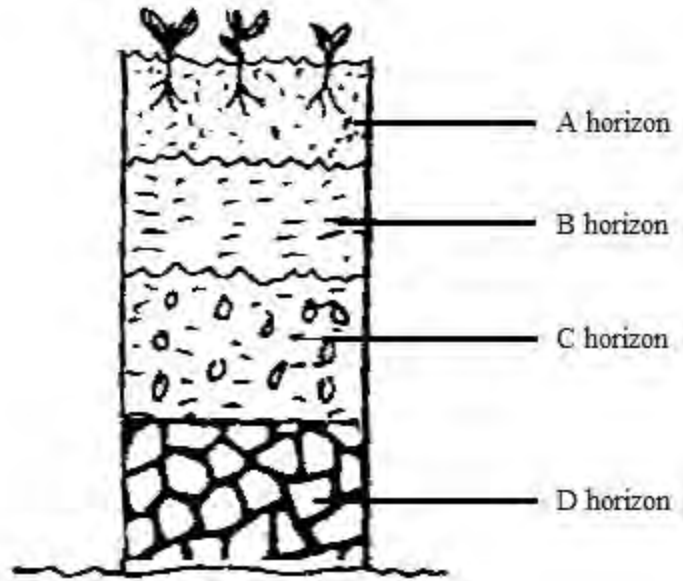


Fig. 3

- (a) (i) Which horizon is referred to as the “layer of accumulation” of minerals?  
(ii) Which horizon is more subjective to weathering?  
(iii) Which horizon is referred to as the layer of “leaching”?
- (b) (i) Why is horizon D referred to as the “impermeable layer”?  
(ii) A soil sample is taken from horizon A and another from horizon B for laboratory analysis. The density for each sample is determined. Which sample will be denser than the other? Give the most important reason for your answer. **(7 marks)**
9. (a) What do you understand by the term “marketing” as it is used in the farming business?
- (b) (i) State **seven (7)** problems of marketing agricultural products.  
(ii) State **seven (7)** marketing functions. **(8 marks)**
10. (a) What do you understand by each of the following terms:  
(i) apiculture.  
(ii) an apiary.
- (b) Outline **eight (8)** factors which have to be considered in selecting a good site for an apiary. **(6 marks)**

### SECTION C (20 Marks)

Answer **one (1)** question from this section. Credit will be given for answers which are precise, brief and to the point.

11. Using the following headings, explain briefly how you would raise and finally store a crop of maize:
- (a) Land preparation.
  - (b) Propagation.
  - (c) Spacing.
  - (d) Weeding.
  - (e) Manures and fertilizers.
  - (f) Pest control.
  - (g) Disease control.
  - (h) Harvesting.
  - (i) Storage.
12. (a) What do you understand by the term “vices” as is used in poultry husbandry?
- (b) Explain **six (6)** measures which can be taken to reduce the incidence of “vices” in poultry.
- (c) Explain briefly **six (6)** measures on how you would observe and maintain hygiene in a deep litter poultry house for broilers.
13. (a) Explain briefly the meaning of the following terms as used in rural economy:
- (i) Farm gate prices.
  - (ii) Whole sale prices.
  - (iii) Retail prices.
- (b) State **five (5)** methods of reducing risks and uncertainty in agricultural production.
- (c) State **four (4)** examples of risks which farmers face in their farming activities.
- (d) Using illustrations, explain the meaning of the following terms:
- (i) Complementary products.
  - (ii) Supplementary products.