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EXAMINATIONS COUNCIL OF ZAMBIA
JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2023

Agricultural Science 501/1

Paper 1

(INTERNAL CANDIDATES)

Time: 2 hours 30 minutes

Marks: 100

Instructions to Candidates

- 1 Pull out the inserted **Answer Booklet** from the question paper.
- 2 Write your **examination number, school/centre name** and **code** on the Answer Booklet.
- 3 There are **two** sections in this paper, **section A** and **B**.

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(i) Section A

There are twenty questions in this section. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**. Choose the best one and mark it on the Answer Grid provided in the Answer Booklet.

(ii) Section B

There are eight questions in this section. Answer **all** questions. Write your answers in the spaces provided in the Answer Booklet.

- 4 Hand in the Answer Booklet and the rest of the question paper separately.

Information for Candidates

- 1 Cell phones and other electronic devices are **not allowed** in the examination room.
- 2 Calculators are **not allowed** in the examination room.

SECTION A: [20 MARKS]

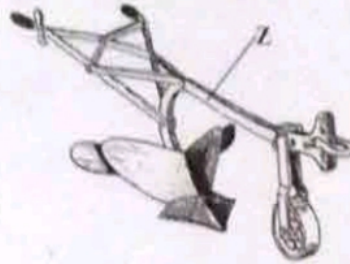
Answer **all** questions. Mark your answers with a **cross (X)** on the Answer Grid provided in the Answer Booklet.

- 1 Which of the following should be applied to the soil where plants are stunted and have yellow leaves?
A Agricultural lime
B Boron
C Compound D
D Nitrogen fertilizer
- 2 Which of the following implements is used for tilling the land on a farm?
A Cart
B Planter
C Plough
D Tractor
- 3 Which of the following diseases of poultry shows signs of whitish-yellow blood stained diarrhoea?
A Coccidiosis
B Fowlpox
C Fowl typhoid
D Newcastle
- 4 Which of the following is a fixed cost? Cost of ...
A fertiliser.
B herbicides.
C permanent labour.
D seed.
- 5 If the stocking rate for cattle on planted pasture is 20 animals to 1 hectare, how many hectares are needed for 160 animals? ... hectares.
A 3
B 5
C 6
D 8

$$\begin{array}{r} 20 \times 8 = 160 \\ 20 \times 8 = 160 \end{array}$$
- 6 Which of the following is **not** a factor of production?
A Capital
B Equipment
C Labour
D Land

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- 7 Study the diagram of an animal drawn implement.



What is the function of the part labelled Z?

- A Hold other parts of the plough.
 - B Linkage of plough to the chain.
 - C Stabilising the plough when moving.
 - D Turning furrow slices and burying vegetation.
- 8 Study the following diagram of a banana plant.



What is the part labelled C?

- A Fruit
 - B Root
 - C Stem
 - D Sucker
- 9 Zero tillage is a farming practice where planting is done on land where the soil is ...
- A left undisturbed by ploughing.
 - B made into contour ridges.
 - C not turned during ploughing.
 - D prepared immediately after harvest.

- 10 Study the diagram showing an area which has been eroded.



What type of erosion is shown in the diagram?

- A Gulley
 - B Rill
 - C Sheet
 - D Wind
- 11 The diagram shows a pest of crops.

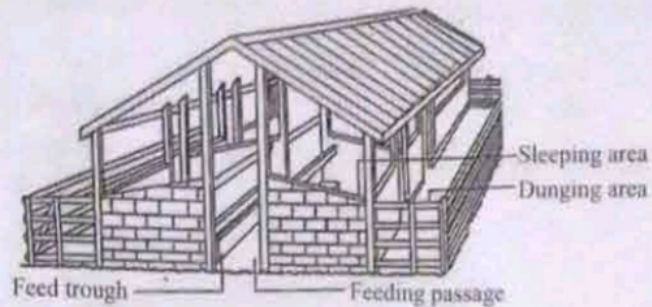


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Which of the following gives the correct identity of the pest and the harm it causes?

	PEST	HARM IT CAUSES
A	Army worm	Eats leaves of crops
B	Fat John	Eats roots of crops
C	Stalk borer	Bores through the stem
D	Weevil	Causes holes in grains

- 12 The following is a diagram of a farm structure.



The structure is a ...

- A cattle pen.
 - B milking parlour.
 - C piggery unit.
 - D poultry unit.
- 13 Leaving plant residues on the surface of the soil at the end of the dry season helps to ...
- A control pests and diseases.
 - B encourage growth of shrubs and trees.
 - C promote fungal and bacterial growth.
 - D retain nutrients and moisture.
- 14 Which of the following parts of a cotton plant is used in producing livestock feed? The cotton ...
- A seed.
 - B lint.
 - C leaves.
 - D ball.
- 15 The following is a map of Zambia.



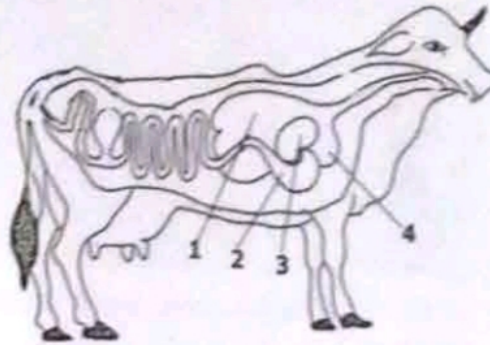
Which labelled area on the map receives highest amounts of rainfall?

- A 1
- B 2
- C 3
- D 4

16 The gestation period of a sow is ... days.

- A 21
- B 30
- C 115
- D 280

17 Study the diagram of a ruminant animal.



Which of the labelled parts is known as the true stomach?

- A 1
- B 2
- C 3
- D 4

18 Which of the following helps to achieve a crumb structure in sandy soils?

- A Adding manure to the soil
- B Ploughing the soil
- C Repeated cultivation
- D Weeding using a hoe

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19 A disease which causes white streaks on maize leaves is caused by ...

- A bacteria.
- B lack of nitrogen.
- C protozoa.
- D viruses.

20 The diagram shows part of a bean leaf damaged by a pest.



Which of the following pests is likely to be responsible for the damage on the leaf?

- A Aphid
- B Grasshopper
- C Praying mantis
- D Stink bug

SECTION B: [80 MARKS]

Answer **all** questions. Write your answers in the spaces provided in the Answer Booklet.

1 AGRICULTURE IN ZAMBIA

The following picture shows a system of farming where simple tools are used.

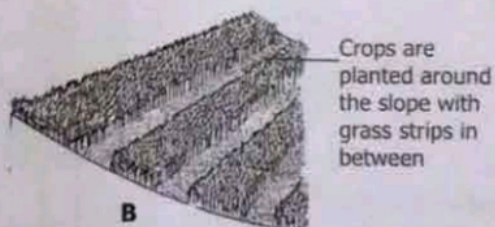
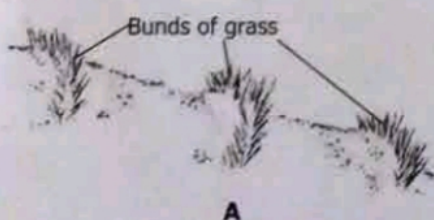


- (a) (i) What system of farming is shown in the picture? [1]
 (ii) Give **three** disadvantages of this system. [3]
 (iii) State **one** way that could be used to improve the farming system mentioned in **a(i)**. [1]
- (b) (i) Define commercial farming. [1]
 (ii) How does commercial farming differ from the system in the picture? [1]
- (c) What is a cash crop? [1]
- (d) Explain how agriculture and industry depend on each other. [2]

[Total: 10 marks]

2 SOIL SCIENCE

The diagrams show two methods of preventing soil erosion.



- (a) What is soil erosion? [1]
- (b) State the methods of preventing soil erosion shown in diagram
 (i) **A**, [1]
 (ii) **B**. [1]
- (c) Explain how soil erosion is prevented in diagram **A**. [1]
- (d) A learner dried a sample of soil and then heated it to red hot. The results were as follows;
 Weight of dry soil – 50g
 Weight of soil after heating – 45g
 Find the percentage of humus in the soil. [2]

This paper
was fair
if you were
studying

[Turn over]

(e) The following are characteristics of different types of soil.

- Poor drainage
- Easily leached
- High capillarity
- Good drainage
- Low capillarity

Which **two** characteristics are for clay soil?

[2]

(f) Give **two** disadvantages of chemical fertiliser on soil.

[2]

[Total: 10 marks]

3 CROP PRODUCTION

(a) What **two** things should a farmer consider when selecting recycled maize seeds for planting?

[2]

(b) Give **two** reasons for staking tomato plants.

[2]

(c) Give **one** sign that shows that maize is ready for harvesting.

[1]

(d) Name **two** types of materials used to propagate pineapples.

[2]

(e) How should beds for vegetable growing be made during heavy rainy conditions?

[1]

(f) State **two** signs of rosette attack in groundnuts.

[2]

[Total: 10 marks]

4 FORESTRY AND CONSERVATION FARMING

The picture is a plantation of trees established around the boundaries of a farm.

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(a) (i) Name **two** exotic trees that can be used this way on the farm.

[2]

(ii) How could trees grown around the farm help to maintain the fertility of the soil on the farm?

[1]

(iii) What type of trees should a farmer plant in order to increase the amount of nitrogen in the soil?

[1]

(b) Explain the effects of mono-cropping on

(i) yields,

[1]

(ii) soil fertility.

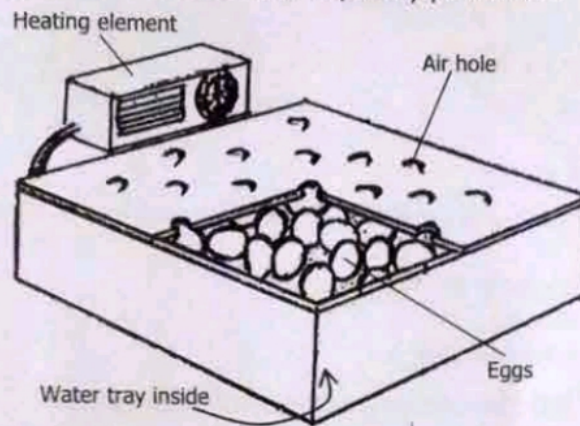
[1]

- (c) How is soil for growing sweet potatoes prepared? [1]
 (d) State **three** advantages of mixed farming. [3]

[Total: 10 marks]

5 LIVESTOCK PRODUCTION

- (a) The diagram is a machine used in poultry production.



- (i) What is the machine used for? [1]
 (ii) How do the following components enable the machine to achieve its function effectively?
 1. Heating element [1]
 2. Air holes [1]
 3. Water tray [1]
 (iii) State **two** principles on which the machine operates. [2]
 (b) What **two** activities should be carried out on broilers before marketing them? [2]
 (c) When the growth rates of animals fed on alternative diets and those fed on recommended feeds are compared, which animals would grow faster? [1]
 (d) Why should concentrate feeds be included in the diet of animals? [1]

[Total: 10 marks]

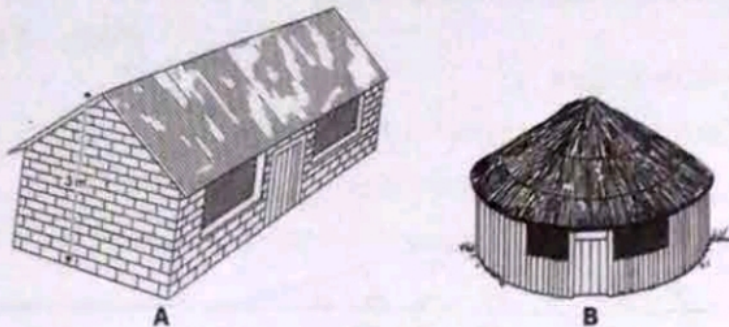
6 FARM MANAGEMENT

- (a) What is interest as used in farm management? [1]
 (b) Explain the difference between simple and compound interest. [1]
 (c) Explain **three** factors that determine how much interest should be paid when one borrows money. [3]
 (d) A farmer borrowed K10 000.00 from a bank at an interest rate of 25%. How much money was the farmer likely to pay back after two years, using simple interest? [3]
 (e) Give **two** reasons why keeping records at a farm is important. [2]

[Total: 10 marks]

7 FARM STRUCTURES

The diagram shows two farm structures.

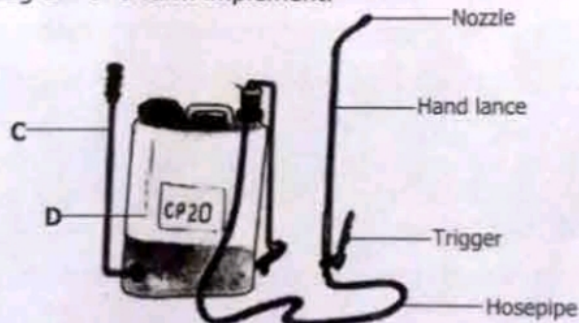


- (a) By giving a reason in each case, explain which farm structure would be
- (i) cooler in the hot season, [2]
 - (ii) durable, [2]
 - (iii) easier to clean? [2]
- (b) (i) State the meaning of the term 'farm structure'. [1]
(ii) Why should a farmer construct a boar pen with strong walls? [1]
- (c) State the function of the following farm structures;
- (i) calf pen, [1]
 - (ii) kraal. [1]

[Total: 10 marks]

8 FARM MACHINERY

The following is a diagram of a farm implement.



- (a) (i) Name the implement. [1]
(ii) State the function of the implement. [1]
(iii) Name the parts labelled C and D. [2]
(iv) State the functions of the parts labelled C and D. [2]
- (b) Why should a farmer avoid spraying crops under the following weather conditions?
- (i) Windy conditions [1]
 - (ii) Hot weather [1]
 - (iii) When it is about to rain [1]
- (c) What forces chemicals (spray) to move into the hand lance? [1]

[Total: 10 marks]