

**THE KENYA NATIONAL EXAMINATIONS COUNCIL**  
**Kenya Certificate of Secondary Education**

**443/1**

**Paper I**

# **AGRICULTURE (Theory)**

**Dec. 2022 – 2 hours**



**Name .....** **Index Number .....**

**Candidate's Signature .....** **Date .....**

### **Instructions to candidates**

- (a) Write your name and index number in the spaces provided above.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) This paper consists of **three** sections; **A**, **B** and **C**.
- (d) Answer **all** the questions in sections **A** and **B**.
- (e) Answer any **two** questions in section **C**.
- (f) All answers should be written in the spaces provided.
- (g) Non-programmable silent electronic calculators may be used.
- (h) **This paper consists of 16 printed pages.**
- (i) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
- (j) **Candidates should answer the questions in English.**

### **For Examiner's Use Only**

<b>Section</b>	<b>Question</b>	<b>Maximum Score</b>	<b>Candidate's Score</b>
<b>A</b>	<b>1–15</b>	<b>30</b>	
<b>B</b>	<b>16–19</b>	<b>20</b>	
<b>C</b>		<b>20</b>	
		<b>20</b>	
	<b>Total Score</b>	<b>90</b>	



**SECTION A (30 marks)**

*Answer all the questions in this section in the spaces provided.*

1. State **four** human factors that influence agriculture. (2 marks)

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2. Name **four** methods of harvesting agroforestry trees. (2 marks)

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3. (a) Differentiate between reafforestation and afforestation. (1 mark)

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- (b) Name **four** cover crops farmers can use for soil and water conservation. (2 marks)

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4. Name **four** types of water pumps. (2 marks)

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5. State **four** factors considered when selecting planting materials for forage crops. (2 marks)

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6. Which branch of agriculture deals with:

(a) utilisation of scarce resources? (1 mark)

(b) maintenance of farm tools and equipment? (1 mark)

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7. Give **four** factors that a farmer should consider in order to prepare good quality chicken manure. (2 marks)

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8. Give **four** reasons for keeping labour utilisation records. (2 marks)

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9. State **four** types of land reforms practised in Kenya. (2 marks)

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10. Give **one** use of each of the two types of inventory records kept by farmers. (2 marks)

Type of inventory record	Use

11. State **four** characteristics of nitrogenous fertilisers. (2 marks)

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12. Give **four** reasons why Kenyans should practise agroforestry. (2 marks)

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13. Distinguish between a dam and a weir. (1 mark)

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14. Name **four** types of grasses grown in high altitude areas as forage. (2 marks)

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15. Give **four** reasons for preparing a seedbed in crop production. (2 marks)

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**SECTION B (20 marks)**

*Answer all the questions in this section in the spaces provided.*

16. If a tomato crop is planted at a spacing of 100 cm by 50 cm, calculate the plant population for a plot of land measuring 5 m by 6 m. (5 marks)

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17. The diagram below shows a method of grafting.



- (a) Identify the method of grafting. (1 mark)  
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- (b) Name two other methods of grafting apart from the one illustrated. (2 marks)  
.....  
.....
- (c) Give two reasons why a farmer may prefer using the grafting method illustrated. (2 marks)  
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18. The diagram below shows a maize cob infected by a certain disease.



- (a) Identify the disease. (1 mark)

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- (b) State **two** control measures for the disease. (2 marks)

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- (c) Name any other **two** diseases of maize in the field. (2 marks)

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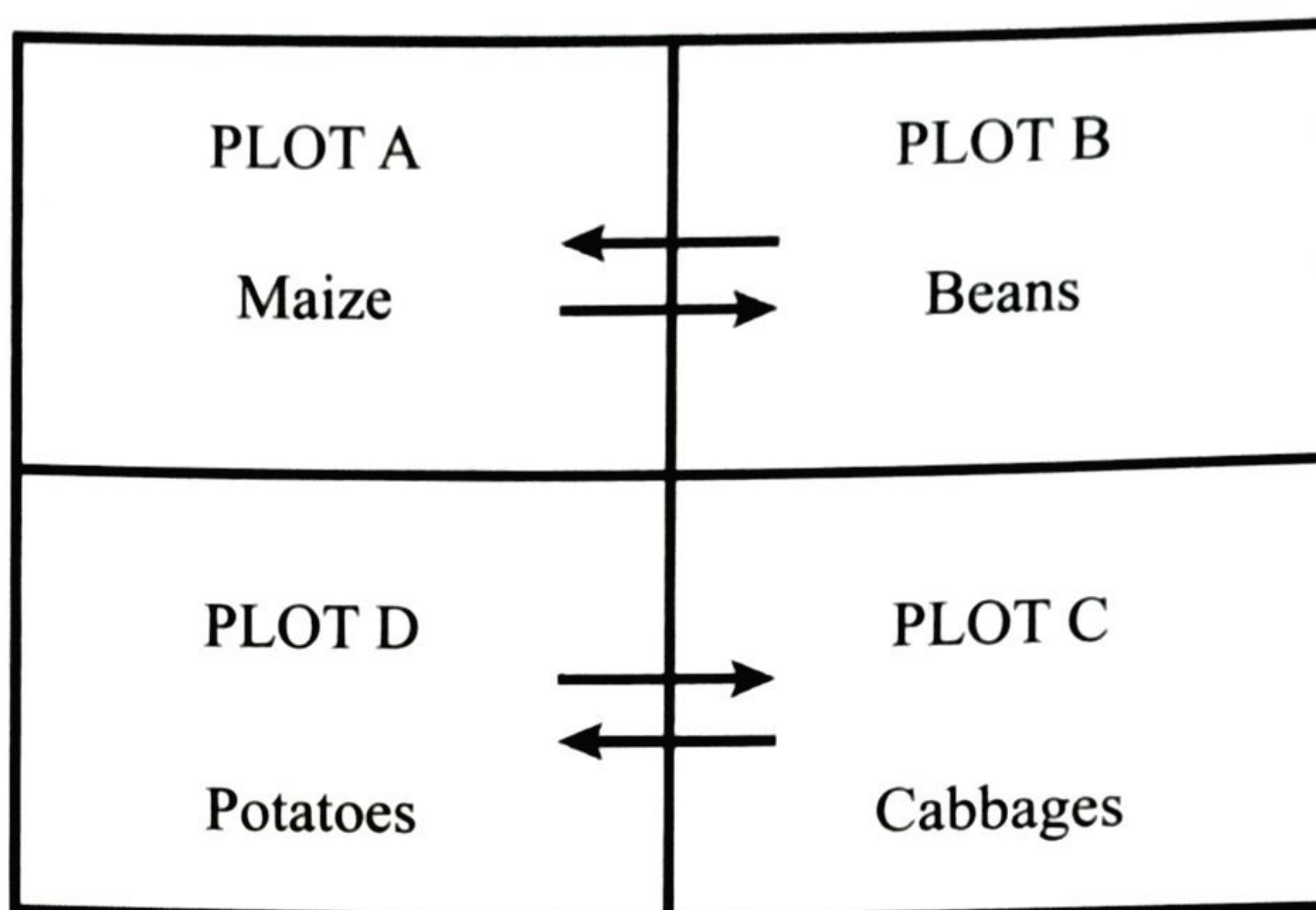
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19. The diagram below shows a crop rotation programme practised on a virgin land for three seasons.



Arrows show how crops were rotated after the first season.

- (a) Give **one** reason why:

(i) maize was planted first in plot A

(1 mark)

.....  
.....

(ii) Irish potato was rotated with cabbage after the first season

(1 mark)

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.....

- (b) Name **two** crops that can be planted in the place of Irish potatoes in the rotation programme.

(2 marks)

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.....

- (c) Give a reason why it is important to include a grass lay in the rotation programme.

(1 mark)

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### SECTION C ( 40 marks)

*Answer any two questions from this section in the spaces provided after question 22.*

20. (a) Describe cabbage production under each of the following sub-headings:
- (i) varieties (2 marks)
  - (ii) nursery establishment (5 marks)
- (b) Give **seven** agricultural support services available to wheat farmers in Kenya. (7 marks)
- (c) Explain any **six** cultural methods of weed control. (6 marks)
- 
21. (a) Explain **six** harmful effects of crop pests. (6 marks)
- (b) State **four** problems farmers encounter when marketing milk. (4 marks)
- (c) Give **four** reasons why farmers should prepare a farm budget. (4 marks)
- (d) Describe the harvesting of tea under the following sub-headings:
- (i) harvesting procedure (3 marks)
  - (ii) precautions taken during harvesting (3 marks)
- 
22. (a) Describe **five** ways in which each of the following affects agriculture:
- (i) HIV and AIDS (5 marks)
  - (ii) poor economic growth (5 marks)
- (b) Give **five** roles of calcium in the growing of tomatoes. (5 marks)
- (c) State **five** details farmers should include in a purchase order. (5 marks)

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<b>Total Score</b>		<b>90</b>	



**SECTION A (30 marks)**

*Answer all the questions in this section in the spaces provided.*

1. Give **four** reasons why a farmer may use a *Jembe* instead of a disc plough. (2 marks)

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2. Name **four** sheep breeds reared in Kenya. (2 marks)

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3. Give **four** ways in which a farmer can restrain a bull on the farm. (2 marks)

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4. Name the **four** stages ticks go through in their life-cycle. (2 marks)

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5. State **four** factors that determine the amount of water taken by an animal. (2 marks)

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6. Distinguish between each of the following pair of terms as used in livestock production:

- (a) selection and breeding (1 mark)

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- (b) inbreeding and line breeding (1 mark)

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7. State **four** signs of parturition in goats. (2 marks)

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8. Name **four** materials a farmer requires in order to construct a barbed wire fence. (2 marks)

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9. State **four** symptoms of coccidiosis infection in chicks. (2 marks)

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10. State **four** management practices carried out to prevent occurrence of parasites in a poultry house. (2 marks)

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11. Name **four** components of milk. (2 marks)

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12. State **four** uses of solar energy in a farm. (2 marks)

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13. (a) State the colour difference between the Galla and Saanen goat breeds. (1 mark)

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(b) Name **one** goat breed that is reared for:

(i) mohair (½ mark)

.....

(ii) meat (½ mark)

.....

14. State **four** ways in which proper housing helps to control livestock diseases. (2 marks)

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15. State **one** use of each of the following farm tools:

(a) pruning hook

(½ mark)

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.....

(b) dosing gun

(½ mark)

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(c) bow saw

(½ mark)

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(d) crowbar

(½ mark)

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## **SECTION B (20 marks)**

*Answer all the questions in this section in the spaces provided.*

- 16.** A farmer wants to prepare 100 kg ration containing 20% DCP from wheat (10% DCP) and sunflower seed cake (35% DCP). Using the Pearson's square method, calculate the quantity of wheat and sunflower seed cake the farmer requires. (5 marks)

17. The picture below shows a poultry rearing system.



- (a) Identify the rearing system. (1 mark)

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- (b) From the picture, state **two** ways in which the system can lead to low egg production. (2 marks)

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- (c) State **two** ways in which the rearing system can lead to loss of birds. (2 marks)

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18. The diagram below shows a practice carried out by poultry farmers to determine productivity of layer birds.



E



F

- (a) Give **one** reason for carrying out the practice in poultry rearing. (1 mark)

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- (b) Apart from the practice shown above, give **two** other features observed on the birds to determine productivity. (2 marks)

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- (c) From the diagram, which advice should be given to the farmer on each of the birds:

Bird E (1 mark)

.....

.....

Bird F (1 mark)

.....

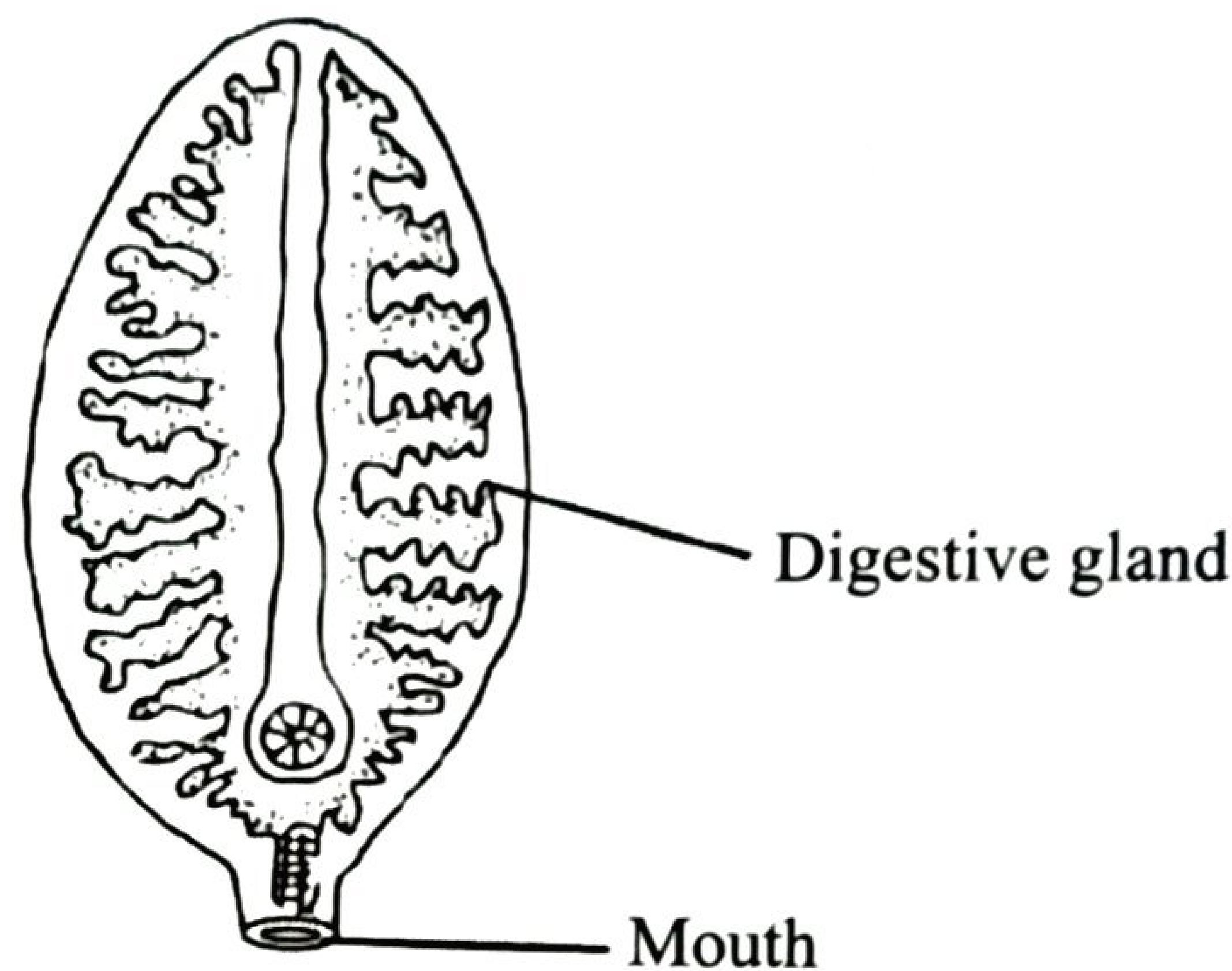
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19. Below is a diagram of a livestock parasite.



- (a) Identify the parasite. (1 mark)

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- (b) Name the intermediate host of the parasite. (1 mark)

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- (c) Explain how each of the following practices helps to control the parasite:

- (i) applying copper sulphate on stagnant water (1 mark)

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- (ii) drenching infested animals with antihelmintics (1 mark)

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- (iii) rotational grazing (1 mark)

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## **SECTION C (40 marks)**

*Answer any two questions from this section in the spaces provided after question 22.*

- 20.** (a) Give **five** disadvantages of natural incubation in poultry rearing. (5 marks)

(b) Describe **five** ways of minimising stress in a deep litter poultry rearing system. (5 marks)

(c) Describe **ten** routine management practices carried out during calf rearing. (10 marks)

**21.** (a) Explain **five** reasons why farmers use animal drawn implements. (5 marks)

(b) Describe **five** maintenance practices for the water cooling system of a tractor. (5 marks)

(c) Explain the difference between a spray race and a cattle dip. (10 marks)

**22.** (a) Describe **ten** routine management practices carried out in the rearing of male calves. (10 marks)

(b) Describe anthrax disease under each of the following sub-headings:

(i) causal organism (1 mark)

(ii) symptoms of infection (4 marks)

(iii) control measures (5 marks)

