

Name \_\_\_\_\_ Index No. \_\_\_\_\_

Candidate's Signature \_\_\_\_\_

Date \_\_\_\_\_

**443/1**  
**AGRICULTURE**  
**PAPER 1**  
**JULY / AUGUST 2014**  
**2 HOURS**

**KIBWEZI DISTRICT FORM 4 INTER-SCHOOLS EXAMINATION 2014**  
**Kenya Certificate of Secondary Education**  
**AGRICULTURE**  
**PAPER 1**  
**2 HOURS**

**INSTRUCTIONS TO CANDIDATES**

- (a) This paper consists of three sections A, B and C..
- (b) Answer the questions in the spaces provided.
- (c) Section A and B are compulsory.
- (d) Select only two questions from section C.

**FOR EXAMINER'S USE ONLY**

SECTION	QUESTION	TOTAL SCORE	STUDENT SCORE
A	1 – 19	30	
B	20 – 23	20	
C	24	40	
	25		
	26		
<b>TOTAL</b>		<b>90</b>	

*This paper consists of 13 printed pages*

*Turn Over*

**SECTION A - 30 MARKS**

*Answer all questions in the spaces provided.*

1. (a) What's meant by the term land reform? ( ½ mark )

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- (b) List **four** examples of land reforms in Kenya. ( 2 marks )

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2. Mention **four** properties of nitrogenous fertilizers. ( 2 marks )

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3. List **three** types of surface irrigations. (1½ marks)

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4. Name **two** field pests and two diseases of tomatoes. (2 marks)

Pests : (i) \_\_\_\_\_  
(ii) \_\_\_\_\_  
Diseases (i) \_\_\_\_\_  
(ii) \_\_\_\_\_

5. List **four** financial documents used by a farmer. (2 marks )

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6. List **four** functions of Farmers Training Centres. (2 marks )

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7. Name **three** sources of water in the farm. (1½marks)

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8. What's the importance of topping in pasture management? (½ mark)

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9. State **two** factors that determine the time tea takes from planting to the start of harvesting. (2 marks )

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10. Give **two** reasons that make it necessary to use vegetative parts of a plant to propagate crops. ( 2 marks )

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11. List **three** biotic factors that influence Agriculture negatively. (1½ marks)

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12. Name **four** methods of farming. ( 2 marks )

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13. Give **three** precautionary measures a farmer should put into consideration when harvesting coffee. ( 1 ½ marks )

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14. State **two** instances when the opportunity cost is said to be zero. ( 1 mark)

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15. Name **three** types of micro catchments used in the farm. ( 1 ½ marks )

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16. State **two** symptoms of calcium deficiency in crops. (1 mark )

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17. Apart from grafting, state two methods of vegetative propagation. (1 mark)

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18. Differentiate between soil cap and hard pan. (1 mark )

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19. A farmer prepared a piece of land measuring 90m x 90m to grow cabbages at a spacing of 60cm x 60cm. Calculate the plant population. (Show your working ) ( 2 marks )

**SECTION B**

*Answer all questions in the spaces provided.*

20. Mr. Mutiso has serious soil erosion on his farm and was advised to construct cut off drains in his farm.  
(a) What was the function of cut off drains. (1 mark )

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- (b) Give **three** possible suggestions why Mr. Mutiso was advised to construct cut off drains.(3marks )

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- (c ) What is soil erosion? (1 mark)

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21. (a) What is soil sampling? (1 mark)

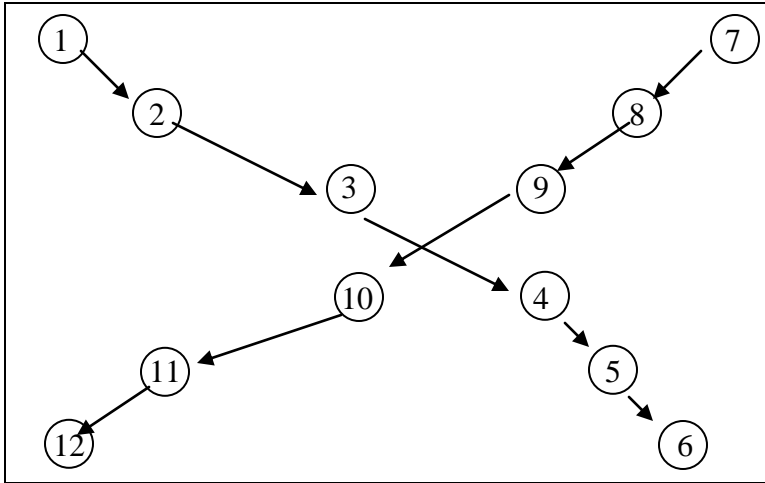
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(b) Below is a method of soil sampling. Use it to answer the question that follow.



(i) What method of soil sampling is represented above? (1 mark)

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(ii) Outline **three** areas which should be avoided during soil sampling. (3 marks)

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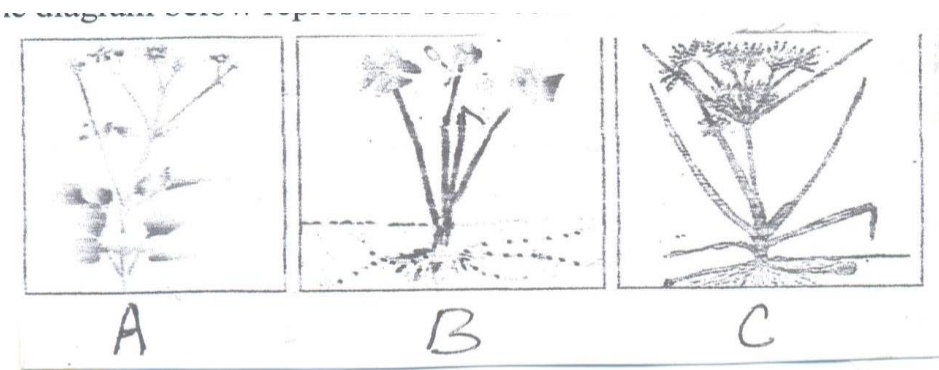
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22. The diagram below represents some common weeds.



(i) Identify weed C \_\_\_\_\_ (1 mark)

(ii) Give a reason why its difficult to control weed B. ( 1 mark )

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(iii) Give **three** harmful effects of weed A to a farmer. (3 marks )

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23. (a) State **two** types of demand. (1 mark)

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(b) Name **two** characteristics of fixed costs. (2 marks )

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( c ) Name **two** types of production functions in agriculture. (2 marks )

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**443/1**  
**AGRICULTURE**  
**PAPER 1**  
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**KIBWEZI DISTRICT FORM 4 INTER-SCHOOLS EXAMINATION 2014**  
**Kenya Certificate of Secondary Education**  
**AGRICULTURE**  
**PAPER 1**  
**MARKING SCHEME**

**SECTION A**

1. (a) Land reform is any organized action aimed at improving land tenure and land use.  
( 1 x ½ = ½ mark )

- (b)
- Land legislation
  - Land adjudication
  - Land registration
  - Land consolidation
  - Tenancy reform
  - Settlement and resettlement

Any 4 x ½ = 2 marks

- 2.
- Hygroscopic
  - Highly volatile
  - Has searching effect
  - Easily scorching
  - Easily soluble
  - Highly volatile

Any 4 x ½ = 2 marks

- 3.
- Basin irrigation
  - Furrow irrigation
  - Flood irrigation

3 x ½ = 1 ½ marks

4. (a) Pests
- American bollworm
  - Cut worm
  - Nematodes
  - Red spider mites
  - Tobacco white fly

Any 2 x ½ = 1 mark

- (b) Diseases
- Bacterial wilt
  - Blossom end rot
  - Early / late blight
  - Damping off disease
  - Fusarium wilt

Any 2 x ½ = 1 mark

*This paper consists of 6 printed pages*

*Turn Over*

5. - Invoice  
- Receipt  
- Delivery note  
- Purchase order 4 x ½ = 2 marks
6. - Organise seminars and courses for farmers.  
- Hold inservice courses for extension staff.  
- Supply planting materials to farmers.  
- Supply breeding stock to farmers.  
- Organise field trips for farmers. Any 4 x ½ = 2 marks
7. - Rain water  
- Ground water e.g well / bore hole / spring  
- Surface water e.g river / stream / dams / fresh water lake 3 x ½ = 1 ½ marks
8. - Stimulate freth growth of pasture 1 x ½ = ½ mark
9. - Altitude  
- Frame formation method 2 x 1 = 2 marks
10. - When the crop does not produce seeds at all.  
- When genetically uniform and high yielding crop is required .  
- When fast establishment is required.  
- When the crop does not produce viable seeds.  
- When certain individual plants are more resistant to diseases. Any 2 x 1 = 2 marks
11. - Pest  
- Parasites  
- Diseases  
- Predators 3 x ½ = 1 ½ mark
12. - Large scale farming  
- Intensive farming  
- Extensive farming  
- Small scale farming 4 x ½ = 2 marks
13. - Pick red ripe berries or dry seeds only.  
- Avoid bending of branches when picking.  
- Picking is done weekly and ripe berries taken for pulping same day. 3 x ½ = 1 ½ marks
14. - When there is no substitutes / alternatives  
- When resources are unlimited 2 x ½ = 2 marks
15. - Negarim  
- Contour bunds  
- Contour ridges

- Semi circular bunds
- Trapezoidal bunds
- Contour stone bunds
- Water spreading bunds

Any 3 x ½ = 1 ½ marks

16. - Blossom end rot in tomatoes  
 - Dying back of plant tips  
 - Stunted growth

Any 2 x ½ = 1 mark

17. - Budding  
 - Layering  
 - Tissue culture

Any 2 x ½ = 1 mark

18. - Soil cap – impermeable layer found on top of horizon A.  
 - Hard pan –Impermeable layer found in horizon B

NB: (Mark as whole ) 1 x 1 = 1 mark

19. Plant population =  $\frac{\text{Area}}{\text{Spacing}} \sqrt{1}$   

$$\frac{(90\text{m} \times 90\text{m})10000\text{cm}}{(60 \times 60) \text{cm}} = 22500 \text{ cabbages } \sqrt{1}$$

NB: Mark response if procedure is shown

## **SECTION B**

20. (a) It leads away water from the farm preventing soil erosion and crop damages.

1 x 1 = 1 mark

- (b) - To check siltation of existing terraces  
 - Minimise lodging of crops due to forceful water flow.  
 - To hold soil being eroded in sloppy land.

3 x 1 = 3 marks

- (c) Removal and carrying away of surface soil by action of water / wind. 1 x 1 = 1 mark

21. (a) Process of taking small quantities of soil from the field as a representative sample of the soil in the particular field. 1 x 1 = 1 mark

- (b) (i) Traverse / diagonal sampling method 1 x 1 = 1 mark

- (c) - Foot path  
 - Area under shade  
 - Mulched slots  
 - Dead furrow / terrace channels  
 - Anthills



- Along the fence
- Unusual wet spots

Any 3 x 1 = 3 marks

22. (i) Nut grass / sedges 1 x 1 = 1 mark  
 (ii) Its has underground nuts 1 x 1 = 1 mark

- (iii) - Lower wool quality  
 - Compete with crops for nutrient  
 - Increase cost of production  
 - Lower both quality / quantity of yield

Any 3 x 1 = 3 marks

23. (a) - Elastic  
 - Inelastic  
 - Unitary

Any 2 x ½ = 1 mark

- (b) - Don't vary with level of production.  
 - Constantly incurred once acquired in the farm  
 - Not normally allocated to specific enterprises or products

Any 2 x 1 = 2 marks

- (c) - Constant return production function.  
 - Increasing return production function  
 - Decreasing return production function.

Any 2 x 1 = 2 marks

### **SECTION C**

24. (a) Cultural methods of controlling pest and diseases.
- Crop rotation – Starves and breaks life cycle
  - Early planting – crop mature before prevalence of pests / diseases.
  - Close season – Starves pests.
  - Burning crop residues – Kills different stages of pests / diseases.
  - Roqueing and proper disposal – Removes infected plants and destroys the pests/ diseases
  - Use of certified seeds – Prevents presence and spread of pest / diseases.
  - Clean seed bed preparation – Prevents pre-disposing factors.
  - Seed dressing – eliminates pests and diseases from planting materials.
  - Destruction of alternate hosts – Eliminates pre-disposing factors.
  - Field hygiene – Prevents infestation / infection of clean planting / planting materials.
  - Mulching – scorches pests / diseases
  - Trap crops – capture and remove infected / infested plants.

5 x 2 = 10 marks

Mark as whole any five points and explained.

- (b) - Lack of enough capital for investment – provision of credit facilities to farmers.  
 - Pests / diseases attack – proper control of pests and diseases  
 - Unpredictable weather – provisional of irrigation facilities.  
 - Fluctuation of market prices – contract farming

- Lack of adequate storage structures – construction of adequate stores.
- Inadequate technical know how – provision of extension services.
- Poor infrastructure – upgrading transport and communication systems.
- Perishability – proper food preservation
- Bulkiness of agricultural materials – proper location of industries
- Competition of other related products – control of prices and formation of cooperative societies.

Any 5 x 2 = 10 marks

25. (a)

Mtumishi Enteprise ✓  
Balance sheet as at 30/12/1988 ✓

Liabilities ✓		Assets ✓	
Shs	Cts	Shs	Cts
<u>Long term Liability</u> ✓		<u>Fixed assets</u> ✓	
Loan	30,000 00	Land	6,000 00
<u>Current liabilities</u> ✓		Building	30,000 00
Overdraft	4,000 00	Tractors	20,000 00
Wages payable	4,000 00	<u>Current Assets</u> ✓	
Interest payable	600 00	Seeds / fertilizers	400 00
Net worth ✓	55,000 00	Coffee trees	4,000 00
		Heifers	14,000 00
		Calf	600 00
		Debtors	3,649 50
		Bank	9,950 00
		Cash at hand ✓	5,000 50
	<u>93,600 00</u> ✓		<u>93,600 00</u> ✓

(b) (i) Financial statement drawn to show the financial position of a business at a particular date. 2 x 1 = 2 marks

(ii) Solvent  
- Because it can meet all its liabilities and a balance left. 2 x 1 = 2 marks

- (c)
- Training farmers – to improve efficiency.
  - Labour supervision – to reduce idleness / lateness
  - Farm mechanization – for fast operations
  - Use of proper tools and equipment – for efficiency and reduce injury.
  - Giving incentives – motivate workers.
  - Maintain good relations with workers – for dialogue and trust.
  - Assign work according to capability – for equitable labour division and work quality.

Stating – 1 mark

Any 5 x 2 = 10 marks

Explaining – 1 mark

26. (a) (i) Ecological requirements

- Rainfall 760 – 1300 mm / year well distributed during growing period.
- Altitude 0 – 2100m above sea level.
- Temperature – warm /18-20°C

- Soil – deep, fertile, free draining soil
- Soil pH 5.5 – 6.5

Any 4 x 1 = 4 marks

(ii) Transplanting

- Carry out hardening off
- Done at rain onset if to rely on rain.
- Dig transplanting holes 15cm deep ( 90cm x 60cm)
- Mix soil with teaspoon full of DSP or handful manure in planting hole.
- Select health, strong seedlings.
- Water 3 – 4 hours before lifting seedlings with soil ball on roots using garden trowel
- Place the seedlings at the same depth as they were in nursery.
- Firm soil, water and mulch

Any 4 x 1 = 4 marks

Mark procedurally

(iii) Field operations

- Top dress with nitrogenous fertilizer at 25 – 30cm tall
- Weed regularly
- Irrigate when dry
- Stake tall varieties
- Prune continuously
- Control pest / disease appropriately

Any 2 x 1 = 2 marks

(b)

- Provide labour information
- Support insurance claims
- Show profit and losses
- Settling disputes among heirs
- Make it easier to share profits / losses
- Determine value of the farm
- Able to assess income tax
- Help detect theft / losses
- Guide in planning and budgeting
- Show history of the farms
- Helps to compare performance of different enterprises.

Any 5 x 1 = 5 marks

(c )

- Good depth
- Proper drainage
- Good water holding capacity
- Adequate nutrient supply
- Correct soil pH
- Free from pest and diseases

Any 5 x 1 = 5 marks

(OWTTE )

Name \_\_\_\_\_ Index No. \_\_\_\_\_

Candidate's Signature \_\_\_\_\_

Date \_\_\_\_\_

**443/2**  
**AGRICULTURE**  
**PAPER 2**  
**JULY / AUGUST 2014**  
**2 HOURS**

**KIBWEZI DISTRICT FORM 4 INTER-SCHOOLS EXAMINATION 2014**  
**Kenya Certificate of Secondary Education**  
**AGRICULTURE**  
**PAPER 2**  
**2 HOURS**

**INSTRUCTIONS TO CANDIDATES**

- (a) Write down your name, admission number in the spaces provided.
- (b) Section A and B are compulsory
- (c) Answer any other two questions in section C in the spaces provided.

**FOR EXAMINER'S USE ONLY**

SECTION	QUESTION	TOTAL SCORE	STUDENT SCORE
A	1 – 19	30	
B	20 – 23	20	
C	24	40	
	25		
	26		
<b>TOTAL</b>		<b>90</b>	

*This paper consists of 13 printed pages*

*Turn Over*

**SECTION A**

1. Differentiate between the terms vectors and parasites as used in livestock health. ( 1 mark)

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2. State **two** qualities of good water for livestock use. (1 mark )

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3. State **three** methods used in selection of livestock. ( 1 ½ marks )

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4. Give **two** signs that would indicate a cow has died of anthrax. (1 mark )

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5. Mention **two** factors that influence digestibility of food in livestock. (1 mark )

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6. Name **three** methods of stocking hives. ( 1 ½ marks )

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7. State **two** reasons which may lead to an awe disowning a lamb. (1 mark )

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8. Give functional difference between rasp file and bastard file. (1 mark)
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- 
9. Name **two** dairy goats reared in Kenya. (1 mark)
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- 
- 
- 
10. Differentiate between crutching and ringing. (1 mark)
- 
- 
- 
- 
11. Give **three** factors that govern the quality of honey at any one time. (1 ½ marks)
- 
- 
- 
- 
12. List **four** categories of livestock diseases. (2 marks)
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- 
- 
- 
- 
13. Define the term vaccine as used in livestock production. (½ mark)
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- 
- 
- 
14. State **two** uses of spiked tooth horrow. (1 mark)
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15. Distinguish between:  
(i) Gestation period and incubation. ( 1 mark )

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(ii) Kid and kindling. ( 1 mark )

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16. State **two** advantages of using P.V.C sheet in laying foundation of farm building. (1 mark )

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17. Give **three** factors that may cause infertility in dairy cows. ( 1 ½ marks )

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18. Give **three** reasons which may necessitate culling of a breeding cow. ( 1 ½ marks )

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19. (i) What is the function of a drawbar in a tractor? ( ½ mark )

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(ii) Name **two** types of cooling systems used in tractors. (1 mark )

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20. (i) What is the reason for having a dump cloth within the incubator as eggs are incubated. (1 mark)

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(ii) Name three factors that must be taken care of in an incubator for eggs to hatch properly. (1 ½ marks)

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(iii) What is a notifiable disease. (1 mark)

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21. (i) State **three** factors that would determine the effectiveness of an acaricide. (1 ½ marks)

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(ii) Give **three** causes of poor quality concrete. (1½ marks)

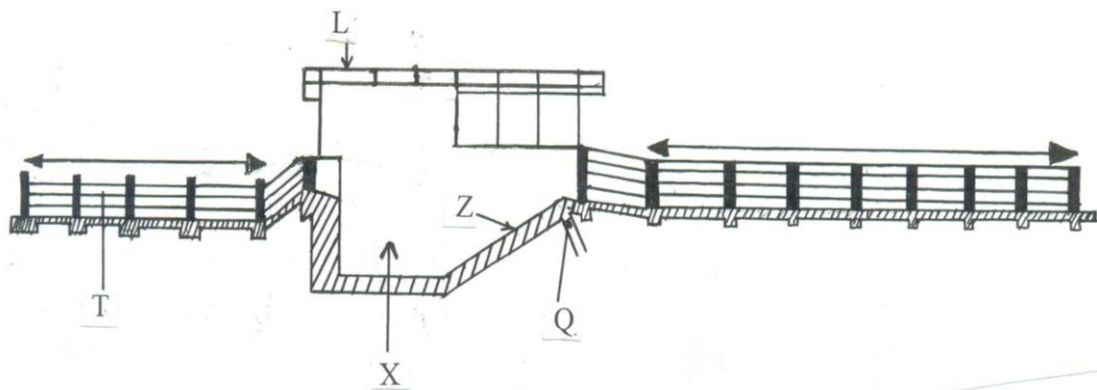
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**SECTION B**

22. Study the illustration of the farm structure below and answer the questions that follow.





(a) What is the structure used for? ( ½ mark )

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(b) What is the main role of the parts marked ( 2 marks )

T \_\_\_\_\_

L \_\_\_\_\_

( c ) Name the parts marked (1½marks)

X \_\_\_\_\_

Z \_\_\_\_\_

Q \_\_\_\_\_

(d) State **two** factors considered in siting the structure. ( 1 mark )

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23. (a) The solar radiation has become an important source of farm power. Briefly explain how solar is obtained. (2 marks )

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(b) State **three** limitations associated with solar radiation. (3 marks )

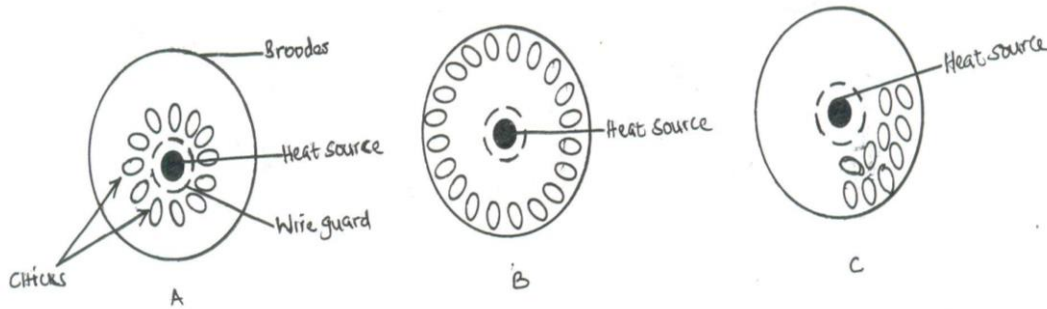
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24. Below are illustrations showing behaviour of chicks in various brooders. Study the diagrams and answer the questions that follow.



(i) State the environmental problem in each brooder as illustrated by the behaviour of the chicks. (3 marks)

A

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B

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C

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(ii) State two ways of overcoming the problem in B. (2 marks)

(2 marks)

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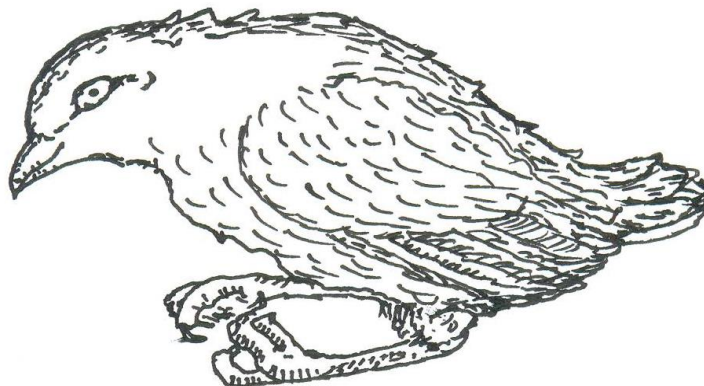


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25. Study the chicken condition illustrated below and answer the questions that follow.



(a) Identify the deficiency nutrient responsible for the condition above. (1 mark)

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(b) State the condition shown above in the diagram. (1 mark)

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(c) In animal nutrition define the following terms. (3 marks )  
Feed

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Feed stuff

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Concentration

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### **SECTION C**

*Answer two questions from this section*

26. (a) Describe the lifecycle of a tapeworm. (8 marks )  
(b) Explain **four** mechanical methods used to control ticks. ( 8 marks )  
(c) State and explain use of any two tools or equipments during fencing. (4 marks )
27. (i) Discuss essentials of clean milk production. (10marks)  
(ii) Describe management of chicks in a brooder. (10 marks)
28. (a) Discuss the disease pneumonia under the following sub-headings.  
(i) Causal organism (1 mark)  
(ii) Animal attacked ( 1 mark)  
(iii) Predisposing factors ( 1 mark )  
(iv) Symptoms ( 3 marks )  
(v) Control ( 3 marks )
- (b) Describe maintenance of a tractor before putting it to daily use in the morning. (6 marks )  
(c) Outline factors to consider to obtain optimum animal power. (5 marks )













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**PAPER 2**  
**MARKING SCHEME**

**SECTION A**

1. Difference between vectors and parasites. (1 mark)  
Vectors are organisms that help in causing spreading of disease organisms e.g bacteria and viruses from one animal to another. Act as carriers of disease.  
Parasite – It's an organism that nourishes itself at the expense of the host and gives nothing in return e.g ticks and tsetse flies. ( 1 mark )
2. Qualities of good water for livestock use. (1 mark )
  - Water without micro-organisms which are harmful.
  - Water without lethal chemicals to animals.
  - Water which doesn't have smell and bad taste.
  - Water without sediments of e.g sand, soil and sticks.
3. Methods used in selection of livestock. ( 1 ½ marks )
  - Mass selection.
  - Progeny testing
  - Contemporary comparison
4. Signs a cow has died of anthrax. ( 1 mark )
  - Animal develops fever.
  - Blood stains in faeces and milk.
  - In pigs throat swells and lead to suffocation and death.
  - Tar like watery blood comes off orifices e.g nose, anus, mouth and blood do not clot quickly.
  - Carcass lack rigor mortis.
  - Underside of the body swells and extensive bloating after death.
5. Factors influencing digestibility of food in livestock. (1 mark)
  - Chemical /composition i.e percentage lignin or cellulose.
  - Form in which feed is offered eg. is it crushed or whole.
  - Species of animal e.g grass digested more in sheep than in pigs.
  - Ratio of energy to protein i.e higher ratio leads to higher digestability.
  - Feed in digestive system.
6. Name three methods of stocking hives. ( 1 ½ marks )
  - Use of swarm net
  - Use of a catcher box
  - Use of combs, wax and sheep sorrel.

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*Turn Over*

7. Why ewe may disown lamb. (1 mark )
- Ewe has poor mothering ability.
  - Udder cut / affected by disease e.g mastitis
  - Deformed land not able to follow the mother.
  - Mother poorly fed may disown.
8. Function difference between rasp file and bastard file. (1 mark)
- Rasp file – Used for smoothening wooden surfaces and mostly if you suspect nails.  
Bastard file- Used for smoothening metallic surfaces e.g sharpening knife or panga.
9. Name two dairy goat reared in Kenya. (1 mark )
- British alpine
  - Aglo-nubian
  - Jamna pari
  - Toggen berg
  - Saanen
10. Difference ( 1 mark )
- Crutching – Practice of cutting wool round the external reproductive organs of a female sheep to facilitate mating and prevent infection
  - Ringing – Practice of trimming wool around the sheath of the penis of the rams to facilitate mating.
11. Factors governing quality of honey. ( 1 ½ marks )
- Type of plants from where nectar was collected.
  - Maturity stage of honey.
  - Method of harvesting.
  - Method of processing honey.
12. Categories of livestock diseases.
- Protozoan diseases.
  - Bacterial diseases
  - Viral diseases
  - Nutritional diseases ( 2 marks )
13. Define vaccine ( ½ mark )
- They are preparations of dead or altered disease causing organisms assisting animals to produce their own antibodies without causing the disease.
14. Uses of spiked toothed harrow.
- Refine soil in secondary cultivation ( fine)
  - Pulverisation of soil / break clods.
  - Leveling the soil.
  - Removing trash.
  - Incorporate fertilizer ( 1 mark )
15. Differentiate ( 2 marks )
- (i) Gestation period – Period between fertilization of the ova and the expulsion of the foetus through the vulva.  
Incubation period – It is the duration between contracting of disease and the first time sign of the disease show / duration taken by an egg to hatch

- (ii) Kid – A young one of a goat.  
Kindling – young one of a rabbit.

(Mark as a whole ) both (i) and (ii) ( 1 mark )

16. Advantage of using P.V.C sheet in laying foundation ( 1 mark)

- Reduces moisture rise up the wall destroying it.
- Reduces termites damage through the wall.

17. Factors that may cause infertility in dairy cows. ( 1 ½ marks )

- Lack of essential nutrients e.g vitamin B
- Infection of the uterus
- Frematin
- Injury of the uterus
- Blockage of fallopian tube
- Retained placenta

18. Factors necessitates culling of breeding cow ( 1 ½ marks )

- Poor health
- Age
- Poor production
- Physical deformities
- Have hereditary defects
- Poor mothering ability
- Not able to produce young ones
- To avoid inbreeding

19. (i) What is the function of a draw bar in a tractor? ( ½ mark )

- Serves for the attachment of trailed implement e.g harrower, transporter or roller ( to be pulled along by a tractor ).

(ii) Two types of cooling systems used in a tractor. ( 1 mark )

- Air cooling system.
- Water cooling system

20. (i) Dump cloth use in an artificial incubator

- To assist in maintaining the level of humidity required for the egg to hatch. ( at 60%)

(ii) Three factors taken care of in an incubator for proper egg hatching.

- Temperature – should be controlled at  $37.5^{\circ}\text{C} - 39.4^{\circ}\text{C}$
- Fresh air – proper ventilation to give enough oxygen
- Relative humidity – which should be at 60%
- Heat distribution – eggs must be turned two times a day.

(iii) Notifiable disease ( 1 mark )

It's a disease whose out-break must be reported to a government authority such as veterinary officer or the police.

21. (i) Factors determining effectiveness of an acaricide ( 1 ½ marks )
- Have ability to kill ticks.
  - Be harmless to both human and livestock.
  - Be stable.
  - Should remain effective after having been fouled with dug.
- (ii) Three causes of poor quality concrete ( 1 ½ marks )
- Impurities in water e.g acids, bases and oils
  - Too little or too much water
  - Poor ratios mixing

## **SECTION B**

22. (a) Dipping livestock against / to control ticks and other external parasites ( ½ mark)
- (b) T – Control movement into the structure  
L – Shelter against rain likely to dilute concentration ( 2 marks )
- (c) X – Dip tank / dip wash  
Z – Climbing / lane / exit steps  
Q – Silt trap outlet } ( 1 ½ marks )
- (d) Factors to consider when sitting the structure ( 1 mark )
- Topography
  - Community based or individual basis
  - Accessibility
  - Maintenance
23. (a) How solar is obtained. ( 2 marks )
- By use of photovoltaic device that produce electricity directly from the sun.
  - The cell of the device create an electric current which moves through series of cells to a battery protector.
  - Current is stored in a 12 volt battery for use.
- (b) Three limitations associated with solar radiation.
- Device used to trap energy is expensive.
  - Requires skilled man power.
  - Not used directly.
  - Unreliable as it depends on sunlight intensity which is not uniform. ( 3marks )
24. (i) A – Very cold  
B – Very hot  
C – Draught from one side ( 3 marks )
- (ii) - Reduce the amount of heat  
- Increase ventilation ( 2 marks )
25. (a) Deficiency shown  
Vitamin B2 ( 1 mark )

- (b) Condition shown is  
Curled toes, paralysis and the sitting posture.
- (c) Feed – Mixture of several food stuffs which supply required nutrients to the animals.  
Feed stuff – Food material containing one or more nutrients.  
Concentrate – Is a feed stuff with high amount of proteins or energy ( CHO) and low crude fibre.

### SECTION C

26. (a) Life-cycle of tapeworm ( 8 marks )
- Man is the main host of tapeworm / primary host.
  - Intermediate host are cattle and pigs.
  - Man drops the tapeworm segments in the faeces.
  - Eggs released from proglottids to the pasture.
  - Eggs picked up by the intermediate host.
  - Eggs hatch to embryos penetrate intestinal wall and enter blood stream.
  - Embryos go to the liver and distribute to muscles where they develop into cyst / bladder worm.
  - Inside the host eggs develop in cysts / bladder worms.
  - Cyst are found in the muscles of the animal.
  - If man eats meat with cysts, become infected.
  - Cyst wall dissolve in the intestine and parasites attach themselves on the intestine wall to develop into adult tapeworms.
- (b) Four mechanical methods of controlling ticks ( 8 marks )
- Double fencing – This creates buffer zone to keep off ticks.
  - Hand picking and killing – i.e deticking, pluck from animal body or strike them to death.
  - Starving to death – Keeping animals away from infected pastures for a long time e.g rotation grazing.
  - Fencing farm – This discourages mixing of infected and non-infected and therefore controls the spread.
  - Altering tick environment - This makes it less conducive for ticks survival e.g top dressing or ploughing.
  - Burning infected pastures – Destroys eggs, larvae, nymphs and adults.
- (c) Tools used during fencing ( 4 marks )
- Wire strainers – Tightens wires during fencing.
  - Splicing – Joining ends of a wire by weaving strands together.
  - Hammer / pliers – Drive through staples on the posts also removes staples.
  - Pliers – Cuts the fencing wires.
- Decide on any other appropriate one
27. (i) Discuss essential of clean milk production. ( 10 marks )
- Healthy milking herd  
Should not be sick and more so from infectious disease e.g tuberculosis or brucellosis
  - Clean milk cows  
The animal shed should discourage muddy soils or materials.
  - Healthy and clean milkman  
Should not suffer from contagious diseases.
  - Clean milking shed  
Milk shed should always be clean and free from contaminative materials.

- Clean milking utensils.  
Seamless milking materials to reduce chances of contamination.
- Milk filtration, cooling and storage  
Filter the cool milk to 5<sup>0</sup>C immediately to reduce chances of milk going bad.
- Avoid flavour in milking.  
Don't give animals feed which gives milk bad flavour e.g onions, Mexican marigold  
Also avoid utensils with copper or iron to avoid flavours.

(ii) Management of chicks in a brooder ( 10 marks )

- Isolate the sick chicks.
- Ensure corners are rounded.
- Provide enough brooding space.
- Clean and disinfect brooder and equipments
- Provide guard around heat source.
- Provide proper litter on floor.
- Maintain proper temperature ( 1<sup>st</sup> week 32 – 35<sup>0</sup>C )
- Make sure proper ventilation.
- Provide adequate feed / chick mash.
- Provide dim light in brooder.
- Remove dead chicks.
- Provide adequate waterers.
- Control parasites.
- Control disease through vaccination.
- Treat the sick chicks.
- Provide adequate water.
- Keep proper records.
- Debeak 8 – 10 days towards end of brooding.
- Change gradually to growers from chick marsh
- Spread newspapers and scatter feed on them for a few days.

28. (a) Pneumonia

- (i) Causal organism – Bacterium mycoplasma mycoides  
- Dust and worms may also cause the disease. ( 1 mark)
- (ii) Animal attacked – Calves, kids, lambs, piglets, poultry ( 1 mark )
- (iii) Predisposing factor – Poor ventilation thus no enough oxygen.  
- Over crowding  
- Age – young are more prone  
- May initiate diarrhoea and other illness. ( 1 mark )

(iv) Symptoms

- Animal dull and reluctant to move.
- Loss of appetite
- Animal develop a rough coat.
- Animal emaciated.
- Animal breath rapidly.
- Abnormal lung sound, hissing, gurgling and bubbling when breathing.
- On pressing chest animal cough
- Fluctuating body temperatures
- Nasal mucous discharge

( 3 marks )

(v) Control

- Keep young animals in warm pens.
- Proper sanitation maintained
- Isolate sick animal for warmth and proper care.
- Early cases should be treated using antibiotics

(b) Morning checks on tractor before use.

- Check water in the radiator.
- Check inflation level in tyres to make sure there is enough pressure.
- Check oil level using dip stick if low.
- Tighten battery if loose.
- Grease where necessary.
- Check all filters air and fuel filters if dirty replace or clean.
- Battery add electrolyte if it needs topping incase reduce in battery.
- Check amount of fuel.

( 6 marks )

(c ) Factors to consider to obtain optimum animal power ( 5 marks )

- Use properly trained animal.
- Feed them maximally.
- Ensure health of animal.
- Ensure proper handling animal
- Use skilled operator.
- Adjust draw bar properly.
- Harness oxen properly.
- Replace worn out parts of the plough.

( 5 marks )