ACK DIOCESE OF MUMIAS JOINT EVALUATION
443/1
PAPER 1
TIME:2 HOURS

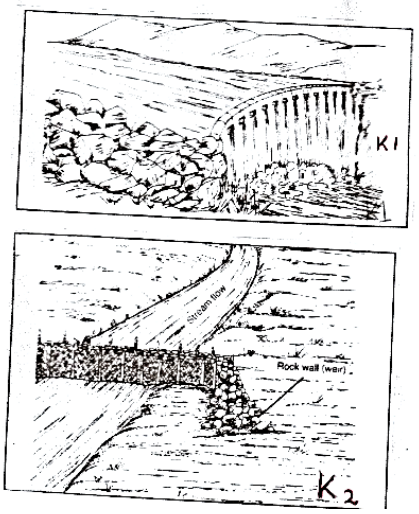
SECTION A(30MKS)

Answer all questions in SECTION A

1. State four effects of high temperatures on crop production. (2mks)
2. State four methods of weed control in Napier grass (*Pennisetum parpureum*) (2mks)
3. List four methods of improving labour productivity. (2mks)
4. Outline four problems on marketing vegetables. (2mks)
5. (a) List three types of organic manure ($1^1/_2$ mks)
   (b) Outline three ways how crop rotation helps to maintain soil fertility. ($1^1/_2$mks)
6. (a) Differentiate between training and earthing up as used in crop production. (2mks)
   (b) State two effects of excess nitrogenous fertilizers in tomatoes. (1mk)
7. Outline advantages of row planting. (2mks)
8. State four functions of Young Farmers Club(YFC). (2mks)
9. Outline four effects of soil erosion. (2mks)
10. State four roles of trees in soil and water conservation. (2mks)
11. State four environmental factors that affect the effectiveness of a herbicide. (2mks)
12. State four advantages of a farmer holding a Land Title Deed. (2mks)
13. Name four examples of joint products in product-product relationships (2mks)
14. List 990o000)

Answer all questions in this section in the spaces provided.

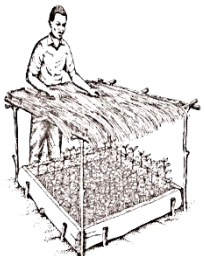
15. The diagram below shows common structures in water supply.



(a) Name structures labelled K_1 and K_2. (2mks)
(b) State two uses of K_1 (2mks)
(c) Name two types of hose pipes. (1mk)

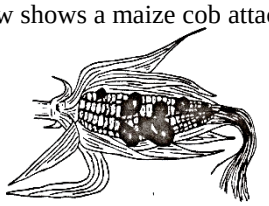
16. (a) Maize is grown at a spacing of 90 cm X 30 cm.Calculate the plant population of maize planted in a plot measuring 29M x 22M. (3mks)
    (b) Explain two factors that influence the spacing of crops. (2mks)

17. The diagram below shows a common practice carried out during raising of agroforestry tree seedlings.



(a) State **two** roles of the shade erected over the nursery bed. (2mks)
(b) State **two** practices that are carried out during the growth of the seedlings. (2mks)
(c) Define the term silvopastoral. (1mk)

18. The diagram below shows a maize cob attacked by a certain disease.



(a) Name the disease. (1mk)
(b) State the causal organism of the disease named in (a) above. (1mk)
(c) Name **one** other crop attacked by the disease. (1mk)
(d) State **two** control measures for the disease. (2mks)

SECTION C (40 MARKS)

Answer any two questions in this section in the spaces provided after question 21.

19. (a) Outline **five** farming practices that encourage minimum tillage. (5mks)
    (b) Describe **four** field management practices carried out in carrot production. (8mks)
    (c) Outline **seven** principles of co-operatives. (7mks)
20. (a) Outline **three** precautions in harvesting of tea. (3mks)
    (b) Outline **five** advantages of rotational grazing. (5mks)
    (c) Explain six factors influencing the demand for a commodity. (6mks)
    (d) State **six** advantages of sub-surface irrigation. (6mks)
21. (a) Outline **four** disadvantages of burning vegetation cover during land clearing. (4mks)
    (b) State **six** advantages of using vegetative materials for planting. (6mks)
    (c) state **four** pieces of information contained in a purchase order. (4mks)
    (d) Explain **six** cultural methods of weed control . (6mks)

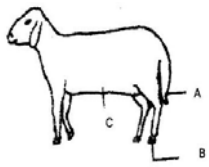
ACK DIOCESE OF MUMIAS JOINT EVALUATION
PAPER 2
2 HOURS
SECTION A (30 MARKS)

Answer all the que**stions in this section in the spaces provided**

1. State **four** precautions that should be observed when shearing sheep to ensure production of high quality wool. (2marks)
2. State **four** characteristics of the Duroc Jersey pig. (2marks)
3. Give **four** ways in which infectious diseases can spread from one livestock to another within a farm. (2marks)
4. State **four** disadvantages of natural mating as a method of breeding in dairy cattle management. (2marks)
5. Give **four** qualities of creep feeds that make it suitable for piglets. (2marks)
6. Give **four** features of housing that help to control livestock diseases (2marks)
7. State **four** reasons for dehorning. (2marks)
8. State **four** disadvantages of free range system of poultry rearing. (2marks)
9. State **four** methods of maintaining a wheel barrow. (2marks)
10. Explain how each of the following is measured in cattle.
    a). Blood temperature. (1mark)
    b). Respiratory rate. (1mark)
11. Outline **four** benefits of using biogas as a source of power on the farm. (2marks)
12. The following is a list of poultry breeds
    White leghorn
    Light Sussex
    Rhode Island
    Red Ancona
    Categorize them into
    (a). Light breeds. (1mark)
    (b). Heavy breeds. (1mark)
13. Give **four** limitations of using solar power on the farm. (2marks)
14. State the function of each of the following:
    (a). Mallet. (½ mark)
    (b). Tocar and canula. (½ mark)
    (c). Garden line. (½ mark)
    (d). Stock and die. (½ mark)
15. Apart from the roof, name **four** other parts of a building that can be constructed using wood.

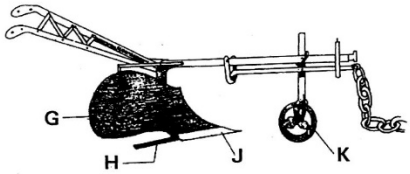
SECTION B (20 MARKS)

16. Below is a diagram of a sheep with some parts labeled A,B and C. Study the diagram and answer the questions that follow.



i). What operation is usually carried out on the part labeled A during a sheep's early stages of life? (1mark)
ii). Why is it necessary to carry out the operation in **(i)** above? (1mark)
iii). Which operation is usually carried out on part labeled **B.** (1mark)
iv). What problem would occur if the operation in **(V)** above is not carried out? (1mark)
v). How should the sheep be held when shearing wool around part labeled **C**? (1mark)

17. The diagram below shows a farm implement. Study it and answer the questions that follow.

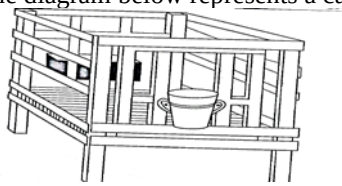


a). Identify the farm implement illustrated above. (1mark)
b). Name the parts labelled **G, H, J** and **K** (2marks)
(c). State **four** functions of the farm implement illustrated above. (2marks)

18. The picture below illustrates a livestock organ infested by a parasite labelled **E**.

(a). Name the disease the livestock is suffering from. (1mark)
(b). Identify the parasite labelled **E.** (1mark)
(c). State **two** control measures for the parasite. (2marks)
(d). State **two** signs of infestation shown in the picture above. (1mark)

19. The diagram below represents a calf pen. Study the diagram and answer the questions that follow.



a) i). Identify the type of floor. (1mark)
ii). How high should the floor be raised above the ground level? (1mark)
b) i). Give **one** reason for having the floor of the calf pen raised. (1mark)
ii). State **two** factors that should be considered in sitting the calf pen. (2marks)

SECTION C (40 Marks)

Answer any two questions from this section in the spaces provided.

20. a). Describe the life cycle of a named tape worm (Taenia spp). (10marks)
b). Describe the management of one day old chicks in a brooder until they are eight weeks old. (10 marks)

21. a) i).Describe the milking procedure under the following sub-headings
i). Pre-milking practices. (5marks)
ii). Procedure of proper milking. (5marks)
b). State the functions of any **five** parts of a piggery unit. (5marks)
c). Outline the daily maintenance practices that should be carried out on a farm tractor.

22. a). State **five** signs of heat in cattle. (5marks)
b). Describe Newcastle disease under the following sub-headings
i). Casual organism. (1mark)
ii). Signs of attack. (5marks)
iii). Control Measures. (4marks)
c). Explain **five** factors that determine the amount of water taken by animals in the farm.

ACK DIOCESE OF MUMIAS JOINT EVALUATION
443/1
PAPER 1
TIME:2 HOURS
MARKING SCHEME

SECTION A(30MKS)

1. State **four** effects of high temperatures on crop production. (2mks)
- High evaporation rates leading to drying/wilting.
- Fast rate of growth/early maturity.
- High quality in some crops (e.g. pineapples and oranges)
- High incidences of diseases e.g. leaf rust in coffee.
- High incidences of pests eg Aphids in vegetables. **½ x4 =2 (First four)**

2. State **four** methods of weed control in Napier grass (***Pennisetum parpureum***) (2mks)
- Cultivation
- Slashing
- Uprooting
- Use of selective herbicides. **½ x4 =2 (First four)**

3. List **four** methods of improving labour productivity. (2mks)
- Labour supervision
- Giving incentives and improving terms and conditions of services.
- Farm mechanisation
- Training **½ x4 =2 (First four)**

4. Outline **four** problems on marketing vegetables. (2mks)
- Seasonality
- Perishability
- Bulkiness
- Poor transport system
- Changes in market demand
- Storage
- Lack of market information **½ x4 =2 (First four)**

5. (a) List **three** types of organic manure ($1^1/_2$ mks)
- Green manure
- Compost manure
- Farm yard manure **½ x 3=($1^1/_2$mks) (First three)**

b) Outline **three** ways how crop rotation helps to maintain soil fertility. ($1^1/_2$mks)
- Inclusion of a legume helps in nitrogen fixation.
- Grass ley improves soil structure
- Maximum utilisation of soil nutrients.
- Helps to control parasitic weeds eg striga in cereals
- Helps to control pests/diseases. **½ x 3=($1^1/_2$mks) (First three)**

6. (a) Differentiate between training and earthing up as used in crop production. (2mks)
Training : Practice of manipulating plants to grow in a designed direction/shape
Earthing up: Placement of soil in form of a heap around the base of the plant.

(b) State **two** effects of excess nitrogenous fertilizers in tomatoes. (1mk)
- Prolonged maturity.
- Cracking of fruits before maturity
- Blossom-end rot
- Excessive vegetative growth. **½ x2=1mk**

7. Outline four advantages of row planting. (2mks)
- Mechanisation possible
- Lower seed rate used.
- Plant population can be established /calculated.

- Easy to carry out cultural practices eg weeding, harvesting, spraying **½ x4 =2 (First four)**

8. State **four** functions of Young Farmers Club(YFC). (2mks)
- Participating in exhibitions and competitions at ASK shows
- Participating in National tree planting activities.
- Involvement and participation in exchange programmes ,both locallyand broad or to other African countries.
- Involvement in workshops and seminars related to Agriculture.
- Involvement in agricultural projects at the club level
- Participation in YFC annual rallies. **½ x4 =2 (First four)**

9. Outline four effects of soil erosion. (2mks)
- Exposure of underground water pipes
- Destruction of wads.
- Sedimentation/silting in lakes,rivers ,fish ponds hence fish production reduces.
- Reduced agricultural production due to loss of top soil.
- -loss of useful soil living organisms.
- Eroded soils deposited in dams /rivers hence becoming shallow **½ x4 =2 (First four)**

10. State **four** roles of trees in soil and water conservation. (2mks)
- -Protection of soil from raindrop erosion.
- Reduce evaporation through shade provision .
- Acts as wind breaks.
- The roots of trees bind soil particles together.
- Reduces the erosive power of running water through speed reduction.
- Decay leaves produce humus which improves water infiltration in the soil.

11. State **four** environmental factors that affect the effectiveness of a herbicide.(2mks)
- Wind
- Soil
- Light
- Temperature
- Rain **½ x4 =2 (First four)**

12. State **four** advantages of a farmer holding a Land Title Deed. (2mks)
- Farmers can secure credit facilities for land development for commercial farming
- Minimises land disputes due to security of land tenure.
- Investment in long term development projects.
- Source of income through leasing part/whole land parcel **½ x4 =2mks=(First four)**

13. Name **four** examples of joint products in product-product relationships (2mks)
- Mutton and skin
- Cotton lint and cotton seed
- Milk and butter
- Beef and hides
- Honey and wax. **½ x4 =2mks=(First four)**

14. List **four** different types of drainage. (2mks)
- Open ditches
- Cambered beds
- French drains
- Underground drain pipes
- Pumping **½ x 4=2mks (First four)**

SECTION B (20MKS)

Answer all questions in this section in the spaces provided.

15. The diagram below shows a common structures in water supply.

(a) Name structures labelled **K_1** and **K_2.** (2mks)

K_1-_____Dam

K_2-_____Weir **1x2=2mks**

(b) State **two** uses of **K_1** (2mks)

- Collect water
- Store water **1x2 =2mks**

(c) Name **two** types of hose pipes.
- plastic
- rubber **½ x 2=1mks**

16. (a)

$$\text{Plant pop} = \frac{\text{Area}}{\text{Spacing}}$$

$$P = \frac{29M \times 22M}{90 \times 30M}$$

$$P = \frac{29M \times 22M}{0.90M \times 0.30M}$$

$$P = \frac{638M^2}{0.27M^2} = 2362.96296$$

P= 2363 plants

b) Explain **two** factors that influence the spacing of crops. (2mks)
- Pests and diseases control-Difficult for pests/diseases to spread.
- Type of machinery hence wider spacing due to low nutrients supply.
- Size of the plant-tall varieties of crops require wider spacing as short require clse spacing.
- Use of the crop-silage requires close; human consumption requires wider spacing.
- Growth habit of the crop-Tillering /spreading crops eg sweet potatoes are widely spaced than erect crops. **1x2 = 2mks)**

17.

(a) State **two** roles of the shade erected over the nursery bed. (2mks)

Reduces evaporation of moisture

Reduces the impact of rain drops **1x 2 =2mks**

(b) State **two** practices that are carried out during the growth of the seedlings. (2mks)
- Mulching
- Watering
- Weed control
- Pricking out
- Root pruning
- Pest control
- Disease control
- Hardening off **1x2 =2mks**

(c) Define the term silvopastoral. (1mk)

Combination of growing trees /shrubs and keeping of livestock **1x1=1mk**

18. The diagram below shows a maize cob attacked by a certain disease.

(a) Name the disease. (1mk)

Smut **1x1 =1mk**

(b) State the causal organism of the disease named in (a) above. (1mk)

Fungus accept *Ustilago maydis* / *Ustilago spp* **1x1=1mk**

(c) Name **one** other crop attacked by the disease. (1mk)

Wheat

Sugarcane **1x1=1mk**

(d) State **two** control measures for the disease. (2mks)
- Hot water treatment
- Use of certified seeds.
- Crop rotation
- Field hygiene. **1x 2= 2mks**

SECTION C (40 MARKS)

Answer any two questions in this section

19. (a) Outline **five** farming practices that encourage minimum tillage. (5mks)-
application of herbicides
- Mulching
- Timing of cultivation
- Restricting cultivation to the area where seeds are .
- Establishing a cover crop on the field.
- Uprooting /slashing weeds in perennial crops. **1x5 =5mks)**

b) Describe four field management practices carried out in carrot production. (8mks)
- Thinning –remove excess carrot seedlings to attain a spacing of 3-4cm within the row.
- Weeding-uproot weeds/mulch to smoother weeds.
- Top dressing-apply nitogenious fertilizers 60kg N per hectare.
- Control pests-Spray using appropriate pesticides eg Aphids
- Earthing up-Earth up the carrots during weeding to encourage root expansion/heap soil around carrots
- Irrigation-Apply water during the dry season. **2x4=8mks**

(c) Outline **seven** principles of co-operatives. (7mks)
- Open membership-voluntary joining regardless of sex ,race,religion,education and political inclinations.
- Equal rights-one-man one vote principle and democracy.
- Principle of share limit-maximum number of allowed purchase of shares to avoid dominion by one member/members
- Interest on shares-Dividends distributed based by one member /members
- Withdrawal from membership -members are free to join or withdraw voluntarily and get back their share contribution.
- Loyalty-Members must be faithful and loyal to their cooperate
- Education –members informed about skills and affairs of co-operatives.
- Cooperative principles-Join the cooperative movement at different levels.
- Non-profit motive-non profit making organisation **1x7 =7mks**

20. (a) Outline **three** precautions in harvesting of tea.
- Do not compress the plucked leaves in the basket due to heating up hence low quality.
- Keep plucked tea in a cool /shaded area
- Plucked tea should be taken to the factory for processing on the same day it is harvested.
- Use woven sisal bags/baskets to encourage ventilation. **1x3 =3mks**

b) Outline **five** advantages of rotational grazing. (5mks)
- Livestock make maximum use of pasture
- Reduces the build-up of pests and diseases.
- Animal waste is distributed evenly in all fields/paddocks.
- Possible to apply fertilizers /reseeding /weeding in parts of the pasture which are not in use.
- Excess pasture is given time to regrow before it is grazed on again **1x5 =5marks**

(c) Explain **six** factors influencing the demand for a commodity. (6mks)
- Population-increase in population leads to increase in demand for goods and services.
- Income- consumers with higher income buy more than those with low income.
- Preferences and tastes.-consumers may prefer certain goods to others and have unique tastes for others.
- Advertisement- may increase demand of goods and services.
- Price expectation-Future prices of certain commodities are likely to go up then the demand of such goods may go up currently or vice versa.
- Level of taxation-fewer consumers may afford highly taxed goods.
- Perishability-lowers demand of goods after deteriorating in quality.
- Future expectations/uncertainity-More of the good may be bought and stocked hence increased demand.

- Prices of related goods- The demand of a commodity increases if there is an increase in the price of a substitute.
- Beliefs,customs and taboos-some communities due to religious beliefs;pork is not consumed.

1x6 =(6mks)

(d) State **six** advantages of sub-surface irrigation. (6mks)

- Fungal diseases reduced since no water accumulation on leaves
- Economical use of water
- Minimizes possible theft of water pipes.
- Minimal erosion due to small water amounts oozing out.
- No construction of dykes, levelling or making level basins
- Minimizes labour requirements especially changing water pipes.
- Can be practised on both sloppy and flat land. **1x6 =6mks**

19. (a) Outline **four** disadvantages of burning vegetation cover during land clearing. (4mks)

- Destroys organic matter/ humus
- Destroys soil structure
- Kills useful soil living micro-organism in the soil eg Nitrogen Fixing Bacteria.
- Accumulation of ash may change soil Ph leading to mineral nutrients imbalance
- Soil cover is destroyed hence exposure of soil of soil erosion agents.

(b) State **six** advantages of using vegetative materials for planting. (6mks)

- Faster maturity than those from seeds.
- Uniformity in qualities eg disease resistance seed size ,colour ,chemical composition.
- It's possible to reduce many varieties of compatible crops on the same root stock
- Use of vegetative materials is easier and faster especially where seeds have long dorminancy periods.
- Seedless crops can be propagated /those whose seeds are not viable.
- Resulting plant has desirable shape and size for ease of harvesting /spraying.

(c) State **four** pieces of information contained in a purchase order. (4mks)

- Date of order
- Date of expected delivery
- The person who orders the goods.
- The person who authorised the order.
- Purchase order serial number
- The type of goods required.
- Quantities of the goods **1x4 =4mks**

(d) Explain **six** cultural methods of weed control. (6mks)

- Mulching to smoother weeds.
- Timely planting so that crops establish early and smoother weeds.
- Proper spacing which creates little space for weed growth forming a canopy which suppresses weeds.
- Flooding which controls non-aquatic weeds in paddy rice fields.
- Clean seedbed-to have crops establish on clean seedbed from weeds.,
- Use of clean seed /planting materials which prevents introduction of weeds on the farm.
- Cover cropping-Effects of cover crops are similar to those of mulch in that they smoother the weeds.
- Crop rotation-some parasitic weeds eg stigma are controlled when dicots are alternated with monocots. **1x6=6mks**

ACK DIOCESE OF MUMIAS JOINT EVALUATION
443/2
PAPER 2
TIME:2 HOURS
MARKING SCHEME

1.	Do not make half-cuts/make complete cuts. Shear sheep during the dry warm season. Do the operation on a clean dry floor/use clean shearing equipment. Do not cut body parts. Use clean shearing equipment
2.	Long body Black in colour Drooping ears Is hardy
3.	through vectors Through ingestion of contaminated food and water/through food and water Through contact with infected surfaces Through inhalation of contaminated air/through air
4.	Extra pasture is required for the bulls that would have been used by the females Difficult to control inbreeding High risk of transmission of breeding diseases Large males can injure small females Wastage of semen Cumbersome and expensive to transport a bull to serve
5.	Easy to digest Highly palatable Nutritious Has laxative effect
6.	Well ventilated Well lit Easy to clean Free from droughts Spacious Leakproof Proper drainage
7.	To make animals docile Reduce incidence of animals injuring each other Reduce incidence of animals damaging farm structures. Increase feeding, watering transportation space. Add aesthetic value to the animal.
8.	Requires a large piece of land Loss birds through theft or predators Loss of eggs in the runs Eggs get dirty Difficult to keep records for individual birds Free range area may be contaminated with diseases and parasites Difficult to follow breeding program Birds can cause damage to crops where perimeter fencing is not properly constructed
9.	Greasing/lubricating the moving parts Repairing broken parts Replacing worn out parts Cleaning after use

	Proper storage Tightening loose nuts and bolts Painting to prevent rusting Apply old engine oil
10.	(a) blood temperature Using clinical/veterinary thermometer inserted in the rectum (b) respiratory rate Using a respirometer observing and counting the rate of inspiration/expiration per minute;
11.	Is a cheap source of energy Requires low running/maintenance costs Is versatile/can be put to many uses such as lighting. Cooking, electricity generation Does not pollute the environment/environmental friendly Is a sustainable/renewable source of energy By products/fermented slurry is used as manure Income generation Raw materials locally available
12.	(a). Light breeds Leghorns Red Ancona Minorca Sykes (b).Heavy breeds Rhode Island Light Sussex New Hampshire red Black Australops
13.	Solar trapping devices are expensive. Power supply/trapping fluctuates depending. on weather conditions. Solar trapping is limited to day light.□✓Requires skilled labour
14.	(a) Mallet (½ marks) Driving wood chisel (b) Trocar and canula (½ marks) Removal of accumulated gases which cause bloat in ruminants. (c) Garden line (½ marks) Setting straight lines; measuring distances; Stock and die (½ marks) Cutting threads on pipes
15.	Floor Ceiling Door Windows
16.	(i). What operation is usually carried out on the part labeled A during a sheep's early stages of life? Docking/tailing
	(ii). Why is it necessary to carryout the operation in (i) above? Even distribution of body fat. Facilitate Easy mating Minimise fouling pof the wool with faeces. Reduce blowfly infestation
	(iii). Which operation is usually carried out on part labeled B Hoof trimming

	(iv). What problem would occur if the operation in (V) above is not carried out? Foot rot
	(v). How should the sheep beheld when shearing wool around part labeled C? In a sitting position facing away from the person shearing
17.	a). Identify the farm implement illustrated above Animal/ ox-drawn plough.
	b). Name the parts labelled G,H,J and K G – Mould board. J – Share H – Land slide K – Land wheel
	(c). State four functions of the farm implement illustrated above Plough/ridging Harvesting root crops e.g. groundnuts. Weeding row planted crop. Opening furrows for planting
18.	(a) Name the disease the livestock is suffering from. □✓Fascioliasis
	(b) Identify the parasite labelled E. □✓Fasciola hepatica
	(c) State two control measures for the parasite. □✓Control the secondary host/snail;□✓Drenching using antihelmintics;□✓Burning pastures;□✓Avoid grazing in marshy areas
	(d). State two signs of infestation shown in the picture above. □✓Damaged liver/organs□✓Presence of the parasite□✓Turnels of parasite movements
19.	(a) (i) Identify the type of floor. □✓Slatted
	(ii) How high should the floor be raised above the ground level? 50cm/0.5m
	(b) (i). Give one reason for having the floor of the calf pen raised. □✓To allow urine and dang to pass through□✓To keep it dry
	(ii). State two factors that should be considered in sitting the calf pen. Direction of the prevailing wind Security Drainage Topography Proximity to the dairy shed
20.	(a) Describe the life cycle of a named tapeworm (Taenia spp). Mature segments/prolottids full of eggs are dropped with human faeces Eggs are then released from the segments. Cattle/pigs ingest the eggs during grazing/feeding In the intestines, the eggs hatch into embryos The embryos penetrate the intestinal wall and enter the up blood stream The embryos first localize in the liver From the liver, the embryos are distributed into the muscles in the body In the muscles, they become cysts/bladder worms/crysticercus cellulose Human beings get infected when they eat raw/ under cooked beef/pork with the cysts In the human intestines, the cyst wall dissolves, the bladder worms emerge and attach on the intestinal wall They then develop into adult worms and start laying eggs.(Marked until the order is broken)
	(b). Describe the management of one day old chicks in a brooder untill they are eight weeks old. On arrival supply water mixed with glucose. Feed chicks on fresh chick mash. Clean feeders before feeding

	provide adequate clean water. Clean waterers before feeding. Provide adequate feeders and waterers as per the age. Vaccinate chicks against gumboro disease after two weeks. Dust the chicks and the brooder with appropriate chemicals to control external parasites. Check and adjust the brooder temperature accordingly. Provide coccidiostats in water/feed to control coccidiosis. Vaccinate chicks against new castle at 3 - 4 weeks; fowl typhoid at seven weeks age. Dim lighting to prevent toe pecking. Introduce roosts, Grit to chicks from 6th week. Gradually introduce grower's mash to the chicks from the 7th week. Isolate and treat sick chicks. Properly dispose off dead chicks. Keep proper records. Deworm the chicks. Debeaking. Provide adequate feeds.
21.	(a). Describe the milking procedure under the following sub-headings (i) pre-milking practices milking materials and equipment should be availed and within reach of milkman; Put the cow in the milking palour Restrain the cow Give food Wash the udder and dry it with separation towels Check for mastitis infection (ii) **Procedure of proper milking** Tightly grasp the teat at its base between the thumb and forefinger to prevent back flow of milk into the gland cistern Close in the other three fingers applying pressure from top to bottom✓to force the teat's orifice open and drain milk out of the teat✓
	(b) State the functions of any five parts of a piggery unit.□✓Food store;Storage of pig feeds.□✓Records room;Keeping feed and weight records. □✓Furrowing pen;for furrowing and rearing piglets. □✓Gilts pen;rearing weaned females upto service age.□✓Boar's pen;houses the breeding boar; for mating.□✓Inpig pen;houses pregnant pigs awaiting furrowing.□✓Weaners/fatteners pen;houses piglets after weaning up to the age of six months.□✓Running yard;used for dunging and basking.□✓Water troughs/drinking nipples;used as watering points for pigs.
	(c). Outline the daily maintenance practices that should be carried out on a farm tractor The engine should be checked daily by use of dip stick and oil level maintained The fuel level should be checked at the start of everyday's work and added if necessary Water level in the radiator should be inspected and if low topped up The level of electrolyte should be checked daily and topped up with distilled water if low The nuts and bolts should be tightened every day Grease should be applied regularly to the moving parts; Large sediments from the sediment bowl should be removed; Tyre pressure should be checked every morning before the day's work and adjusted accordingly; The fan-belt tension should be checked to ensure that it deflects between 1.9 cm - 2.5 cm when pushed;

	The brake shaft bearing should be greased and break fluid level maintained; Lost bolts and nuts are replaced.
22.	(a) State five signs of heat in cattle Restlessness Mounting others and stands still when mounted Slight rise in temperature Slight drop in milk yield Vulva swells and becomes reddish Clear or slimy mucus discharge from vagina Frequent mowing
	(b). Describe Newcastle disease under the following sub-headings (i)Casual organism virus.
	ii)Signs of attack Difficult in breathing. Beaks remain wide open and necks are strained Dullness. Birds stand with eyes closed all the time. Loss of appetite. Nasal discharge which force the birds to shake their heads to clear it. Birds walk in a staggering motion since the nervous system is affected. Often the bird have their heads and wings drooping, Birds produce watery greenish diarrhoea. Eggs laid have soft shells.
	iii) Control Measures: Vaccination during the first six weeks and then two to three months later. Quarantine. Kill the infected birds and burn them. Obtain stock from reputable source.
	(c). Explain five factors that determine the amount of water taken by animals in the farm Size of the animal/weight of the animal;a fat and heavy animals require more water than a lean and light animal Level of production ; animals producing milk or eggs require more water Type of feed eaten; animals drink more water when they eat dry feeds Ambient temperature ; animals need more water when it's hot due to high rate of sweating Species of the animal ; cattle need more water than camels under the same environmental conditions

IGOJI SUB-COUNTY
443/1
PAPER 1
TIME: 2 HOURS

SECTION A:30MKS

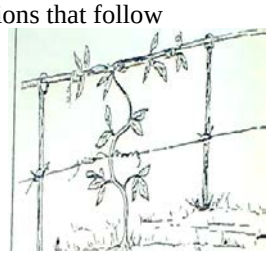
Answer all questions in this section

1. State **two** categories of field crops (2 marks)
2. Outline two economic importance of predators in agriculture (1 mark)
3. Outline **four** importance of primary cultivation (2 marks)
4. State **two** disadvantages of metallic pipes (2 marks)
5. State **three** ways in which crop rotation maintains soil fertility (3 marks)
6. Outline **two** classification of fertilizer on the basis of mode of application (2 marks)
7. Name **four** methods of breaking seed dormancy (2 marks)
8. State **three** importance of using polythene sleeves as compared to use of direct establishment of trees on the ground (3marks)
9. Outline **three** effects of too much application of nitrogen in tomato production. (2marks)
10. State **three** disadvantages of co-operative land tenure system (3marks)
11. State 3 importance of trees in soil and water conservation (3marks)
12. Outline 4 information contained in a delivery note (4marks)

SECTION B:20MKS

Answer all questions in this section

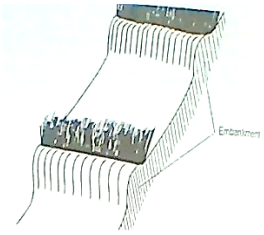
13. The diagram below shows some routine field practice done to various crops. Study and answer the questions that follow

A 

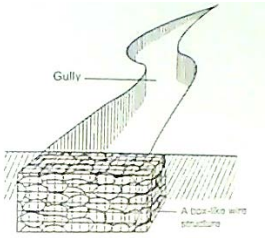
B 

(i) Identify the above routine practice A,B (2marks)
ii) Give examples of crops where the above practice can be done (2marks)
iii) State **four** reasons for training crops (4marks)

14. The diagram below shows methods of soil and water conservation



A



B

(a) Identify the above structures A,B (2marks)
(b) State **two** ways in which the structure labeled **(b)** conserves soil and water. (2marks)
(c) Name **two** materials used for construction of the structure labeled **(b)** (2marks)
(d) Name **two** types of guiles where the method identified in (**b)** can be used. (2marks)
(e) Describe how gulley erosion is formed (2marks)

SECTION C:40MARKS

Answer any two questions in this section.

15. a) Explain **five** climatic factors that influence crop production (10 marks)
    b) Explain **five** principles of crop rotation (10 marks)
16. a) Describe **five** sites of agroforestry trees (10 marks)
    b) Explain **five** types of risks and uncertainties (10 marks)
17. a) Explain **five** factors that determine the quality of hay (10 marks)
    b) Explain **five** economic importance of weeds (10 mark

IGOJI SUB-COUNTY
443/2
PAPER 2
TIME: 2 HOURS

SECTION A:30 MARKS

1. State **two** uses of footbath in a plunge dip. (2 marks)
2. Outline any **two** structural requirements of a produce store. (2 marks)
3. Outline **three** causes of infertility in dairy cattle. (3marks)
4. Outline **three** operational differences between mould board and disc plough. (3marks)
5. State **three** characteristics of clean and high-quality milk. (3marks)
6. Outline **three** details found in a calving record in animal breeding. (3marks)
7. Name **two** dual purpose breeds of cattle. (2marks)
8. Name the breed of pig characterized by the following. Pure black, long body, drooping ears and hardy.
9. Define the following terms

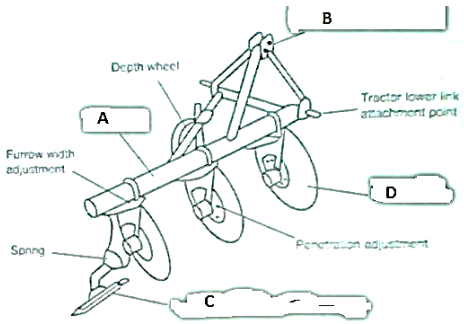
a) Gene frequency (1mark)
b) Hetorosis (1mark)

10. Name **two** tools used for checking straightness of a wall. (2marks)
11. State **two** roles of a queen in a bee colony. (2 marks)
12. State **three** reasons why steaming up is carried out in cattle. (3 marks)
13. Name **four** methods of livestock farming (2marks)

SECTION B(20MARKS)

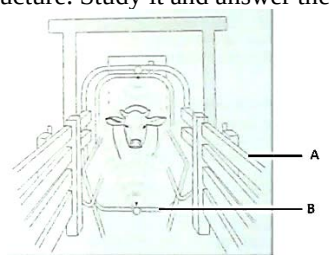
Answer all questions in this section

14. The diagram below shows a farm implement. Study it and answer the questions that follow.



i) Identify the above farm implement. (1mark)
ii) Name the part labelled A,B,C (4marks)
iii) State the function of the part labelled **A** and **C**. (2marks)
iv) Name the method of attachment for the above implement. (1mark)
v) State **two** maintenance practices carried out on the part labelled **D**. (1mark)

15. The illustration below a farm structure. Study it and answer the question that follows.



i) Identify the above structure. (1mark)
ii) Name the part labelled. A,B
iii) Outline **three** advantages of the above structure as compared to plunge dip. (3marks)

16. A Dairy farmer wanted to prepare 100kgs of rearing ration containing 16%DCP.the feed stuff available are wheat bran containing 11%DCP and sunflower cake containing 34%DCP.Uing Pearson's square method, calculate the amount of the amount of each feed stuff. (4marks)

SECTION C:(40 MKS)

Answer any 2 questions

17 a) Explain **two** reasons why identification is done in livestock. (10marks)
b) Outline **five** advantages of battery cage system in poultry rearing. (5marks)
c) State **five** pre-milking practices done before milking. (5marks)

18 a) Describe **five** effects of endo parasites in livestock. (10marks)
b) Describe **five** repreventive measures of diseases in livestock. (10marks)

19 a) Outline **seven** characteristics of an ideal dairy cattle. (7marks)
b) Outline **five** symptoms of Newcastle attack in poultry. (5marks)
c) Describe **four** factors that affect maintenance requirements of an animal. (8marks)

IGOJI SUB-COUNTY
AGRICULTURE
PAPER 1
MARKING SCHEME

SECTION A: (Answer all the questions)

1. State **two** categories of field crops. (2 x 1 = 2 marks)
   - ❖ Annual crops
   - ❖ Perennial crops
2. Outline **two** economic importance of predators in agriculture. (1 x ½ = 1 marks)
   - ❖ Some predators kill our livestock
   - ❖ Some predators feed on pests reducing pest population
3. Outline **four** importance of primary cultivation. (4 x ½ = 2 marks)
   - ❖ To remove weeds
   - ❖ To bury organic matter
   - ❖ Facilitates water infiltration and aeration
   - ❖ To make planting easy
   - ❖ To destroy soil borne pests by exposing them to predators and the sun
4. State **two** disadvantages of metallic pipes. (2 x 1 = 2 marks)
   - ❖ Expensive
   - ❖ Require high technical skills to install
5. State **three** ways in which crop rotation maintains soil fertility. (3 x 1 = 3 marks)
   - ❖ Control crop pests
   - ❖ Control crop diseases and weeds
   - ❖ Ensures maximum utilization of soil nutrients by growing a variety of crops
6. Outline **two** classification of fertilizer on the basis of mode of application. (2 x 1 = 2 marks)
   - ❖ Foliar based fertilizers
   - ❖ Top dressing fertilizers
7. Name **four** methods of breaking seed dormancy. (4 x ½ = 2 marks)
   - ❖ Mechanical method
   - ❖ Heat treatment
   - ❖ Chemical treatment
   - ❖ Soaking in water
8. State 3 importance of using polythene sleeves as compared to use of direct establishment of trees on the ground (3 x 1= 3 marks)
   - ❖ Prevent root disturbances during transplanting
   - ❖ Seedlings can be stores awaiting conducive conditions for planting
   - ❖ Easy to transport the seedlings
   - ❖ Seedlings establish faster in the field
9. Outline **three** effects of too much application nitrogen in tomato production.(3 x 1 = 3marks)
   - ❖ Prolonged maturity
   - ❖ Cracking of fruits before maturity
   - ❖ Cause blossom-end rot
   - ❖ Cause too much vegetative growth hindering fruit formation
10. State **three** disadvantages of co-operative land tenure system. (3 x 1 = 3marks)
    - ❖ No land disputes
    - ❖ Labour is well utilized
    - ❖ Encourages effective farm mechanization
    - ❖ Profit is shared according to the number of shares an individual has in society
11. State **three** importance of trees in soil and water conservation. (3 x 1 = 3 marks)
    - ❖ Act as wind breakers
    - ❖ Leaves decompose to form humus
    - ❖ Reduces the impact of rain drops to the soil
    - ❖ Tree roots bind the soil particles firmly together hence controlling soil erosion

- ❖ They shade the soil hence reducing moisture loss from the soil

12. Outline **four** information contained in a delivery note. (4 x 1 =4 marks)
- ❖ The date of delivery
- ❖ The quantity and type of goods delivered
- ❖ The method of delivery
- ❖ The person who receives the goods
- ❖ Condition in which the goods are received
- ❖ Delivery note serial number

SECTION B

13. The diagram below shows some routine field practice done to various crops. Study and answer the questions that follow

(i) Identify the above routine practice. (2 x 1 = 2 marks)

A. Trellising

B. Propping

(ii) Give examples of crops where the above practice can be done

(a) Trellising -> Passion fruit, tomatoes, tall varieties of beans. (1x1 = 1 marks)

(b) Propping -> Banana (1 x 1 = 1 mark)

(iii) State **four** reasons for training crops. (4 x 1 = 4 marks)
- ❖ To attain the required shape
- ❖ To have clean fruits
- ❖ To control soil borne pests and diseases
- ❖ Facilitates easy penetration of sprays

14. The diagram below shows methods of soil and water conservation

(a) Identify the above structure. (2 x 1 = 2 marks)

A. Bench terrace

B. Gabion/Porous dam

(b) State **two** ways in which the structure labelled (b) conserves soil and water. (2 x 1 = 2 marks)
- ❖ Traps soil particles contained in the run off
- ❖ Reduces the speed of run off

(c) Name **two** materials used for construction of the structure labelled (b). (2 x 1 = 2 marks)
- ❖ Stones
- ❖ Wire mesh

(d) Name **two** types of gullies where the method identified in (b) can be used . (2 x 1 = 2 marks)
- ❖ V-shaped gully
- ❖ U- shaped gully

(e) Describe how gulley erosion is formed (4 x ½ = 2 marks)
- ❖ Rain water leaves the water shed areas
- ❖ Flowing water forms small channels (rills)
- ❖ Channels widen and deepen
- ❖ Channel floor is scoured further to form a gully

SECTION C: (40 MARKS) (ANSWER ANY TWO QUESTIONS)

15.(a) Explain **five** climatic factors that influence crop production. (5x2=10marks Explained)
- ❖ Rainfall
- ❖ Wind
- ❖ Temperature
- ❖ Relative humidity
- ❖ Light etc.

b) Explain **five** principles of crop rotation. (5 x 2 = 10 marks Explained)
- ❖ Crops belonging to the same family should not follow one another
- ❖ Deep rooted crops and shallow rooted crops should be alternated
- ❖ Crops that are difficult to weed should be alternated with those that are easy to weed
- ❖ Crops which are heavy feeders should come first in the cycle followed by light feeders
- ❖ Leguminous crops should be included in the cycle

- ❖ Include a grass lay in the program.

(a) Describe five sites of agroforestry trees. (5 x 2 = 10 marks Explained)

- ❖ Boundaries
- ❖ River banks
- ❖ Slopes
- ❖ Homestead
- ❖ Along terraces

(b) Explain **five** types of risks and uncertainties. (5 x 2 = 10 marks Explained)

- ❖ Fluctuation of commodity prices
- ❖ Physical yield uncertainties
- ❖ Ownership uncertainty
- ❖ Sickness and injury uncertainty
- ❖ Obsolescence outdated machineries
- ❖ Natural catastrophes

16.(a) Explain **five** factors that determine the quality of hay. (5 x 2 = 10 marks Explained)

- ❖ Forage species used
- ❖ Stage of harvesting hence leaf: stem ratio
- ❖ Length of the tying period
- ❖ Weather conditions during the tying process
- ❖ Condition of the storage structures

(b) Explain **five** economic importance of weeds. (5 x 2 = 10 marks Explained)

- ❖ Some weeds have medicinal value
- ❖ Some weeds are edible to human and livestock
- ❖ Some weeds act as soil cover
- ❖ Weeds add organic matter to the soil when they decompose
- ❖ Leguminous weeds fix nitrogen in the soil

IGOJI SUB-COUNTY
AGRICULTURE
PAPER 2
MARKING SCHEME

SECTION A 30MKS

1. Uses of foot bath in a dip

For washing feet of animals
To control foot rot disease 2*=2

2. Structural requirement of a produce store

- Vermin proof
- Well ventilated
- Easy to clean
- Raised above the ground 2*1==2mks

3. Causes of infertility in dairy cattle.

- Damaged uterus
- Disease infection e.g. vaginitis
- Retained placenta
- Blocked fallopian tube
- Lack of essential nutrients e.g. vitamin E 3*1=3

4. Operational differences between mouldboard and disc plough

Mouldboard	Disc plough
Plough at uniform depth	Plough at varying depth
Leaves smooth and level seed bed	Leaves rough seed bed
May create hard pans	No creation of hard pans
May break when it encounters obstacles	Do not break easily on encountering obstacles

3*1=3

5. Characteristics of clean and high quality milk.

- Free from pathogens
- Free from hair, dirt and dust
- Good flavor
- Has correct chemical composition 3*1=3

6. Information found in calving record.

- Date of service
- Date of calving
- Weight of calf
- Remarks
- No. of calves 3*1=3

7. Dual purpose breeds of cattle.

Sahiwal Simmental
Redpoll 2*1=2

8. Breed of pig.

Duroc jersy 1X1=1

9. a) Gene frequency.

It's the occurrence of the genes that carry desirable characteristics 1mk

b) Hetorosis.

It's the increased vigour and performance resulting from crossing two unrelated superior breeds.

10. Tools for checking straightness of a wall

Spirit level
Plumb bob 2X1=2

11. Roles of a queen.

C Lay fertile eggs
Produce pheromone to keep the colony together . 2X1=2MKS

12. Importance of steaming up.

Provide nutrient for maximum foetal growth
Build up energy for parturition
Ensure birth of healthy young ones
Promote good health of the mother 3*1=3

13. Types of livestock farming methods.

- Pastoralism
- Fish farming
- Beekeeping
- Poultry farming 2*1=2

SECTION B 20 MARKS

Identify the part
Disc plough 1*1=1

ii) Parts

a) Beam
b) Top link attachment
c) Furrow wheel
d) Concave disc 4*1=4

iii) Function

A beam –provides point for attachment of all other parts of plough 1*1=1
C. Furrow wheel, adjust the depth of ploughing 1*1=1

iv) Method of attachment

3 point hitch 1*1=1

v) Maintenance practice of part D

Broken disc should be replaced
Hammering blunt disc 2*1=2

15. Identify the structure

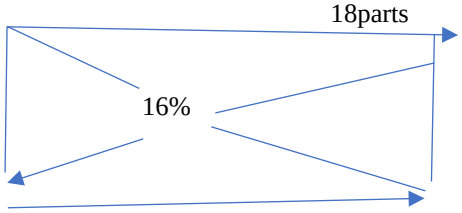
Spray race 1*1=1
ii) Part **A** .Side wall 1*1=1
- Part **B** Spray pipe system 1*1=1

iii) Advantages of the above structure over plunge dip.

- less labor is required
- spraying is faster
- requires small amount of acaricides
- suitable for pregnant and sick animals

16.

Wheat bran 11% 18parts



Sunflower 34% 5parts

23 parts

18/_23*100=78kg of bran
5/23=22kg of sunflower

SECTION C

17. a) Reasons for identifying farm animals

- For selection and breeding
- For disease control and treatment
- Feeding
- Record keeping

- For culling — well explained 5*2 =10

b) Advantages of battery cage system

- no bullying during feeding
- low labor requirements
- no contamination of feed by birds
- clean eggs are collected
- egg eating and cannibalism is reduced
- accurate records are kept
- less energy is wasted hence high production — 5*1=5

c. Pre –milking practices

- feeding animals
- restraining cow into the crush
- assembling milking equipment's
- washing udder
- drying the teats
- checking for mastitis — 5*1=5

18. a) effects of endo parasites

- Cause anemia
- Deprive the host off food
- Causes irritation
- Transmits disease
- Destruction of internal organs
- Blockage of internal organs — 5*2=10 well explained

b) Preventive measures of livestock disease

- isolation of sick animals
- imposition of quarantine
- slaughtering of sick animals
- use of antiseptics and disinfectants
- Use of prophylactic measures e.g. deworming. — 5*2=10 well explained

19. a) characteristics of an ideal dairy cattle

- Straight top line
- Well-developed hid quarters
- Large udder
- Prominent milk veins
- Large stomach
- Docile/mild temperament
- Lean bodies with little fresh
- Wedges shaped body — 7*1=7 well explained

b) Symptoms of Newcastle attack

- difficulty in breathing
- beaks remains open and necks is strained
- dullness
- birds stand with eyes closed
- lack of appetite
- laying soft shelled eggs — 5*1=5

c) Factors affecting maintenance requirements in farm animals

- body size
- age of the animal
- animals' activity
- level of production — 4*2=8 well explained

KANDARA
443/1
AGRICULTURE
Paper 1

Answer all the questions in this section in the space provided.

1. Give **four** control measures of maize streak virus disease. (2marks)
2. What is the relationship between scarcity and choice as used in agricultural economics
3. State **four** precautions taken when harvesting cotton. (2 marks)
4. State **four** factors which affect the price of goods in a market. (2 marks)
5. Name **two** types of production functions. (1 mark)
6. State **four** contributions made by establishing settlement schemes in Kenya. (2 marks)
7. State **two** problems faced by cooperative societies in Kenya. (1 mark)
8. State **four** factors which increases the rate of soil erosion. (2 marks)
9. State **four** benefits of good soil structure to crop production. (2 marks)
10. State **two** disadvantages of plantation farming. (1 mark)
11. State **four** advantages of having a hedge fence in a farm. (2 marks)
12. State **four** environmental factors that may affect crop distribution. (2 marks)
13. Give **three** reasons why it is advantageous to use farmyard manure instead of a straight fertilizer.
14. State **two** main reasons for treating agroforestry tree seeds. (1 mark)
15. State **three** reasons why it is important to keep field operation records in crop production.
16. Give **four** characteristics of extensive farming system. (2 marks)
17. Give **two** examples of fixed costs and two examples of variable costs in the production of Irish potatoes. (2 marks)

(a) Fixed costs
(b) Variable costs.

18. State **two** cultural methods of controlling pests in an established field of millet. (1 mark)

SECTION B (20 MARKS)

Answer all the questions in this section in the space provided.

19. A farmer wants to apply fertilizer in his one hectare plot of Chilli. The recommended rate of NPK is 100:60:80 kg/ha respectively. The farmer has Urea (46%N); MOP/KCl (60% K_2O) and DAP (18:46:0) fertilizers in the store. Calculate the amount of Urea, DAP and MOP required for the one hectare plot. (5marks)
20. A sample of soil was obtained from a certain farm at a depth of 20cm. An experiment to determine the moisture content on this sample produced the following data.
    Mass of the can = 10.88g
    Mass of can + moist soil = 116.02g
    Mass of can + dry soil 85.34g

(a) Compute the percentage moisture content of the soil sample. (2 marks)
(b) Describe how the mass of dry soil was obtained in the experiment. (2 marks)
(c) Suggest the type of soil used in the experiment. (1mark)

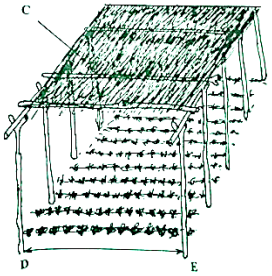
21. The diagrams below illustrate some common diseases in beans. Study them and answer the questions that follow.

A

B

(a) Identify the diseases in the diagrams labeled **A** and **B**. (2marks)
(b) Name the causal organisms of the diseases labeled **A** and **B**. (2marks)
(c) State **one** common method of controlling the two diseases. (1mark)
(d)

22. A diagram of a nursery for raising tomato seedlings is shown below. Study the diagram and answer the questions that follow.



(a) What is the recommended spacing between **D** and **E** in the diagram above? (1 mark)
(b) At what stage of growth should tomato seedlings be transplanted? (1 mark)
(c) State **one** advantage of having part labeled **C**. (1 mark)
(d) State **one** way of minimizing root damage of tomato seedlings during lifting from the nursery.
(e) State **two** management practices carried out in the nursery from the time seedlings emerge to the stage of transplanting. (1mark)

SECTION C (40 MARKS)

Answer any two questions from this section in the spaces provided after question 25

23. (a) State **seven** advantages of vegetative propagation in crop production. (7 marks)
(b) Explain how a farmer can improve the productivity of his labour force. (6 marks)
(c) Explain **seven** factors that encourage soil erosion. (7 marks)

24. (a) Explain the importance of irrigation in crop production. (5 marks)
(b) Why is pruning done in crop production? (5 marks)
(c) Describe **five** ways by which a farmer can make efficient use of a pasture crop. (5 marks)
(d) State **five** reasons why timely weed control is advisable in crop production. (5 marks)

25. (a) Describe transplanting of cabbage seedlings. (8 marks)
(b) Outline **six** post-harvest practices carried out in the production of maize. (6 marks)
(c) The following entries were obtained from Mrs. Wamarua's farm for the year 2020.

The Opening Valuation of the farm was kshs 60,000; Closing Valuation as at 31st December 2020 was kshs 90,000.Wages paid was kshs 50,000; Equipment bought worth kshs 70,000; drugs bought kshs 25,000; Pig feeds purchased was kshs 30,000. The farmer made the following sales during the year; pig sales kshs 70,000, maize sales kshs 40,000 and Piglet sales kshs 42,000.

i) Prepare the profit and loss account for Mrs. Wamarua's farm for the year ended 31st December 2020. (5marks)
ii) Did Mrs. Wamarua make a profit or loss? (1 mark)

KANDARA
443/2
PAPER 2
TIME: 2 HOURS

SECTION A (30 MARKS)

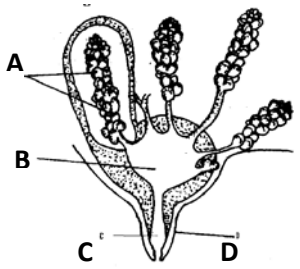
Answer all question in this section in the space provided

1. (a) What is a notifiable disease (1mark)
   (b) Name **two** notifiable diseases of cattle (1mark)
2. Distinguish between cropping and harvesting in fish. (2marks)
3. Give **four** faults in the eggs that are detected during egg candling (2marks)
4. Give **two** reasons for maintaining farm tools (l mark)
5. (a) Give **two** roles of litter in a deep litter poultry house (1mark)
   (b) State **one** role of foot bathing a poultry house (1mark)
6. Name **two** cultural uses of livestock. (1mark)
7. Mention **four** advantages of embryo transplant (2marks)
8. Give functional difference between the following tools (2marks)
   (a) Stock and die and pipe cutter
   (b) Ball pen hammer and claw hammer
9. State **four** structural requirement of calf pen (2marks)
10. State **four** signs of furrowing observed in pigs (2marks)
11. State **two** methods of restraining cattle (1mark)
12. State **four** reasons for castrating piglets. (2 marks)
13. Give **four** effects of internal parasites that are harmful to livestock. (2 marks)
14. State **four** symptoms of Rinderpest disease in cattle. (2 marks)
15. Give **four** reasons why farmers steam up dairy cattle. (2 marks)
16. Outline **two** ways of maintaining good health in livestock. (1 marks)
17. Name **four** methods of dehorning in animals. (2 marks)

SECTION B (20 MARKS)

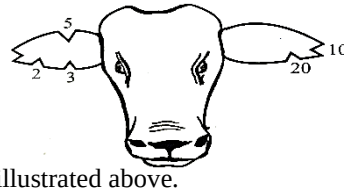
Answer all question in this section in the spaces provided

18. The diagram below is a cross section of part of a cow's udder.



a) Label the parts marked **A**, **B, C** and **D** (2marks)
b) Name **two** hormones that control milk - let down in a dairy cow. (2marks)
c) What is a dry cow therapy (1mark)

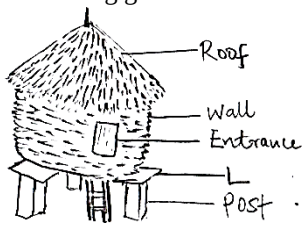
19. The diagram below illustrates a method of identification in livestock production. Use it to answer the questions that follow.



a). Name the type of identification illustrated above. (1mark)
b) Give the identification number of the animal illustrated in the diagram above. (1mark)
c) Name the tool used to carry out the practice. (1mark)

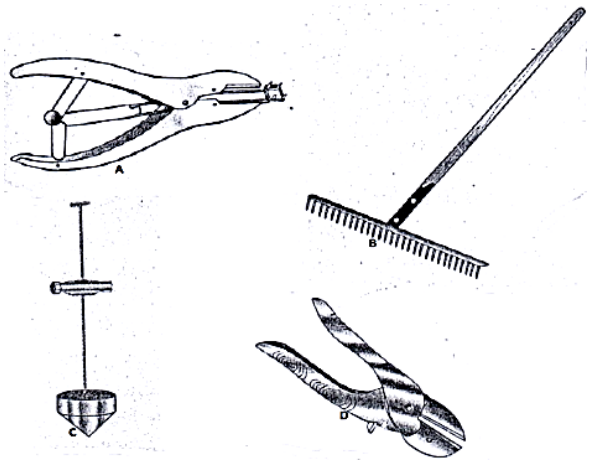
d). State **two** reasons for carrying out identification of the animals. (2marks)

20. The diagram below is a farm structure for storing grain.



a) Identify the farm structure. (1 mark)
b) State the function of the part labeled L (1 mark)
c) State **one** disadvantage of the roofing material used in the farm structure. (1 mark)
d) State **two** ways in which the structure is made ready for grain storage. (2 marks)

21. Below are illustrations of farm tools labeled **A,B,C** and **D**. Study them and answer questions that follow.



a) Give the correct name of each of the tools illustrated above. A,B,C,D (2marks)
b) State **one** way how tools **B** and **D** are maintained? (1mark)
c) State **one** proper use of each of the tools **A** and **C**. (2marks)

SECTION C (40 MARKS)

Answer any two questions from this section in the spaces provided after question 24

22. (a) Explain **four** factors that affect digestibility of food in livestock (8 marks)
(b) Explain **seven** essentials of clean milk production (7 marks)
(c) State **five** disadvantages of natural method of mating. (5marks)

23. (a) Describe the control measures of cannibalism in layers. (8 marks)
(b) State **five** maintenance practices of a mould board plough. (5 marks)
(c) Explain **seven** the importance of fences in a farm (7 marks)

24. (a) Describe the process of digestion in the rumen. (5marks)
(b) State **five** short term tractor servicing. (5 marks)
(c) Explain **five** maintenance practices of a wheel barrow. (5 marks)
(d) State **five s**ymptoms of Trypanosomiasis (Nagana) in the attacked animals (5 marks)

KANDARA
PAPER I
443/1
MARKING SCHEME
SECTION A (30 MARKS)

1.	**Control measures of maize streak virus disease** i. Control of vectors. ii. Use of resistant variety. iii. Early planting. iv. Rogueing. v. Use of certified seeds / use disease free seeds. vi. Crop rotation. vii. Field hygiene / destroy crop residues. viii. Close season.
2.	**Relationship between scarcity and choice as used in agricultural economics** Scarcity is where production resources are limited in supply relative to demand; therefore a choice has to be made on to which enterprises to allocate the limited resources. **Mark as a whole)** 2 x 1
3	**Precautions taken when harvesting cotton** i. Harvest when weather is dry. ii. Avoid mixing with dry leaves and small twigs. iii. During harvesting separate grade A and grade B. iv. Harvest the bolls when they are fully open. v. Don't put in gunny bags./ sisal bags
4.	**Factors which affect price of goods** i. Demand. ii. Cost of production. iii. Supply. iv. Government control policies. v. Quality of the produce
5	**Types of production functions** i. Increasing returns. ii. Constant returns. iii. Decreasing returns.
6.	**Contributions made by settlement schemes** i. Increased production. ii. Better use of extension services. iii. Increased agricultural credit. iv. Promotion of marketing cooperatives. v. More improved livestock. vi. Acceleration in development of infrastructure
7.	**Problems faced by cooperative societies in Kenya** i. Poor management/ administrative problems. ii. Shortage of capital. iii. Disloyalty of members. iv. Political interference. 2 x ½
8.	**Factors which increases the rate of soil erosion** i. High amount and intensity of rainfall. ii. Steep slope / topography. iii. Ploughing up and down the slope. iv. Loose / sandy soils. v. Shallow soils.

	vi. Bare soils / poor vegetation. 4 x ½
9.	**Benefits of good soil structure in crop production** i. Allows proper infiltration / drainage / percolation of water. ii. Has good aeration / prevents excessive accumulation of Carbon (IV) Oxide. iii. Allows proper root penetration; for nutrients and water uptake. iv. Has good water holding capacity. v. It is not easily eroded. vi. Allows better root development and tuber expansion 4x ½
10.	**Disadvantages of plantation farming** i. Overdependence on one enterprise. ii. High initial capital.2 x ½
11.	**Advantages of a hedge fence** i. Protect the farm as a fence. ii. Form wind breaks. iii. Provide wood and timber for fuel, building and sale. iv. Marks the boundary. 4 x ½
12.	**Environmental factors that affect crop distribution in Kenya** i. Rainfall. ii. Prevailing winds / wind. iii. Temperature. iv. Altitude. v. Soil type.4 x ½
13.	**Advantages of FYM over straight fertilizer** i. Cheaper than straight fertilizer. ii. Supplies more than one nutrient. iii. Improves soil structure / aeration. iv. Improves water retention capacity. v. Encourages microbial activity in the soil. vi. Does not pollute the environment. 3 x ½
14.	**Main reasons for treating agroforestry tree seeds** i. To break seed dormancy and ensure rapid germination. ii. To improve vegetative growth associated with nitrogen fixing bacteria.2 x ½
15.	**Importance of field operation records in crop production** i. To show the activities those have been carried out on a particular field to avoid repetition. ii. To know the resources spent on particular activity. iii. Help in timely performance of certain activities such as fertilizer application. iv. Help in the calculation of cost of production and hence profit or loss margins. v. Used for future planning / decision making.3 x ½
16.	**Characteristics of extensive farming system** i. Crop and livestock production requires large tracts of land. ii. Settlement is small and scattered to allow mechanized cultivation. iii. Farming processes are entirely mechanized. iv. Extra labour force may be employed in peak production periods. v. Enjoys economies of large scale.4 x ½
17. (a)	**Costs in the production of Irish potatoes** **Fixed costs** i. Depreciation of farm tools and equipment. ii. Land rent iii. Salaries of regular / permanent labour iv. Interests on any borrowed capital/ loans 2 x $^1/_2$

(b)	**Variable costs** i. Cost of Irish potato seeds / setts ii. Cost of fertilizer. iii. Wages of casual Labour. iv. Cost of pesticides / herbicides. **(Accept any specific variable cost)** 2 x ½
18.	**Cultural methods of controlling pests in an established field of millet** i. Field hygiene / rogueing / field sanitation. ii. Trap crop. iii. Destruction of alternate hosts / proper weeding. iv. Timely harvesting. 2 x ½
	SECTION B (20 marks)
19.	**Calculation** First calculate the amount of compound fertilizer as it contains **2** nutrients (P and **N**). 46 kg P_2O_5 will be supplied by 100 kg DAP 60kg P_2O_5 will be supplied by = $\frac{100 \times 60 \text{ kg DAP}}{46}$ = 130.43kg DAP 1 x 1 But DAP also supply N 100kg DAP supply 18kg N 130.43kg DAP supply = $\frac{18 \times 130.43 \text{ kg N}}{100}$ = 23.48 kg 1 x 1 But the total amount of N required is 100kg/Ha Therefore: Amount of N supplied by urea will be = 100 – 23.48 kg = 76.52 kg 1 x 1 Since Urea (46 % N) Therefore : 46 kg N will be supplied by 100 kg Urea 76.52 kg N will be supplied by = $\frac{100 \times 76.52 \text{ kg Urea}}{46}$ = 166.35 kg Urea 1 x 1 MOP/KCl contains 60% K_2O 60 kg K_2O will be supplied by 100 kg MOP 80 Kg K_2O will be supplied by = $\frac{100 \times 80 \text{ kg MOP}}{60}$ = 133.3 kg MOP
20. (a)	**Solution** Amount of moisture content = $\frac{116.02g - 85.32g}{85.34g - 10.88g}$ x 100 % $\frac{30.7}{74.46}$ x 100% = 41.2 % 2 x 1
(b)	**How dry soil was obtained** i. The can with moist soil is heated at 105 ^{0}C in an oven / with a Bunsen burner for 2 hours. ii. The soil is stirred occasionally using a stirring rod to help in evaporation of moisture. iii. The can with heated soil is cooed in a desiccator and reweighed for 2 to 3 times until a constant mass is obtained. iv. Mass of dry soil is then obtained by subtracting mass of the can from the mass of heated soil + can. 4 x ½
(c)	**Identity of soil :** Clay soil 1 x 1

21.(a)	**Crop diseases** **A –** Leaf spot. **B –** Halo blight. 2 x 1
(b)	**Causal organisms of** **A –** Fungi / *Cerospora sp* **B –** Bacteria / *Pseudomonas sp* 2 x 1
(c)	**Common method of controlling the disease** Spraying with appropriate fungicides. 1 x 1
22.(a)	**Recommended spacing between D and E** 1 metre. 1 x 1
(b)	**Stage of transplanting** At 10-15 cm / at 6 weeks of age / at 4-6 true leaves. 1 x 1
(c)	**Advantage of part labelled C** i. Reduce amount of water loss through evaporation. ii. Modify the temperature. iii. Reduce splash erosion. iv. Conserve soil moisture1 x 1
(d)	**Ways of minimizing damage of seedlings during transplanting** i. Watering the seedlings thoroughly before transplanting. ii. Uprooting gently using appropriate tool e.g. garden trowel.1 x 1
(e)	**Management practices** i. Proper watering. ii. Controlling weeds iii. Controlling pests and diseases. iv. Hardening off. v. Pricking out. 2 x ½
	SECTION C (40 MARKS)
23.(a)	**Advantages of vegetative propagation in crop production** i. Help in preservation of desirable characteristics of plants through successive generations. ii. Disease resistance imparted from some crops. iii. Short period to maturity. iv. Quick way of multiplication of low viability plants. v. Give more than one variety on one crop. vi. Seedless plants can grow through vegetative reproduction. vii. It is cheaper, easier and more rapid method of plant propagation. viii. The method can be used for plants which can be easily grown in gardens due to their small size. ix. Produces the same output as the parent. x. Helps to maintain the next generation of useful parent characters. xi. Produce is of superior quality. 7 x 1
(b)	**Ways of improving labour force productivity** i. Giving incentives e.g. awards, promotions etc. ii. Remunerate workers well by paying good salaries. iii. Provide training to the workers. iv. Provide welfare services for workers eg medical facilities, housing, recreation or games. v. Provide efficient working tools or machines. vi. Assign duties to workers appropriately/ specialization. vii. Supervise workers well7 x 1
(c)	**Factors that encourage soil erosion** i. Lack of ground cover exposes soil to agents of soil erosion.

	ii. Steep slopes increase the speed of surface runoff hence erosive power of water. iii. Light / sandy soils are easily carried away by agents of soil erosion. iv. Shallow soils are easily saturated with water and carried away. v. High rainfall intensity increases the rate of surface run off. vi. Frequent cultivation / overcultivation pulverize the soil making it easy to detach and carry away soil. vii. Overstocking leas to overgrazing which destroy ground cover exposing it to agents of erosion. viii. Burning / deforestation destroy vegetation cover and expose it to agents of soil erosion. ix. Ploughing up and down the slope creates channels which speed up and increase the erosive capacity of water. x. Cultivation along riverbanks destroys vegetation and soil structure exposing it to agents of soil erosion. xi. Cultivating when too dry destroy soil structure making it easy to be eroded. xii. Long slope increases the volume and speed of runoff increasing erosive power. xiii. High rainfall amount leads to saturation of soil thus increase surface run off.
24.(a)	**Importance of irrigation** i. Irrigation increases crop yield and ensures a steady supply of food throughout the year. ii. Maximizes the utilization of resources eg in places where the soil is fertile but the water / rain is inadequate. iii. Important for the reclamation of arid and semiarid land. iv. Provides a regular, reliable and adequate supply of water in areas with little or no rainfall. v. Source of employment in areas where it is used extensively. vi. Promotes crop production for the export market and therefore contributes to a country's revenue. vii. Allow production of paddy rice. viii. Allow growing of crops in green houses. ix. Facilitates fertigation in crop production. x. Control pests. 5 x 1
(b)	**Why pruning is done in crop production** i. Make the plant take a desired shape. ii. To control cropping to ensure production of high quality berries / fruits. iii. To remove diseased parts to prevent disease spread. iv. To ease penetration of sprays to minimize wastage. v. To control pests / diseases by eliminating the microclimates. vi. To facilitate light penetration and optimize photosynthesis. vii. To remove dead / broken parts. viii. To remove old / unproductive parts on which resources are wasted. ix. To remove lateral growth e.g. in tea. x. To facilitate management practices e.g harvesting. 5 x 1
(c)	**Ways of making efficient use of a pasture crop** i. Rotational grazing / controlled grazing. ii. Proper stocking rate. iii. Conserve excess pasture. iv. Timely defoliation. v. Practice zero grazing. vi. Graze different classes / species of animals.5x 1

(d) **Reasons for timely weed control in crop production**

i. Prevents weeds from establishing in the field.
ii. Prevents allelopathic effects of weeds.
iii. Reduce the cost of crop production.
iv. Reduce multiplication and spread of the weeds.
v. Reduce the spread of pets / diseases for which weeds act as alternate hosts.
vi. Reduce competition between weeds and the crop.
vii. Avoid contamination of crop with weed seeds.
viii. Prevent injury to the farmer / livestock.5x 1

25.(a) **Transplanting of cabbage seedlings**

i. Transplant when seedlings are pencil size thick/one month old-$1^1/_2$ months / 10-15cm / have 4-6 true leaves.
ii. Water the nursery to ease lifting of seedlings.
iii. Use garden trowel to ensure seedlings are lifted with a lump of soil around the roots.
iv. Apply appropriate phosphatic fertilizers / manure in the planting hole.
v. Mix the fertilizer / manures thoroughly with the soil.
vi. Lift only healthy and vigorously growing seedlings from the nursery.
vii. Plant one seedling per hole at the same depth as it was in the nursery.
viii. Transplanting is preferably done in the evening or on a cloudy day.
ix. Mulch transplanted seedlings if necessary.
x. Provide a temporary shade to transplanted seedlings.
xi. Water seedlings as necessary.
xii. Place the soil around the base of the seedlings and firm.
xiii. Dig holes at a spacing of 60-100cm by 50-60 cm
xiv. Transplant at onset of rains / when soil as enough moisture / water the holes.
xv. Transport seedlings carefully / use a wheel barrow. 8 x 1

(b) **Post-harvest practices carried out in the production of maize**

i. Shelling; removing maize grains from the cobs.
ii. Drying; until the right moisture content for storage is attained.
iii. Winnowing / cleaning; to remove chaff.
iv. Dusting; applying chemical powders on seeds to prevent attack by storage pests.
v. Processing; transforming a raw material into final product e.g. maize grains to maize flour.
vi. Storage; for future use.6 x 1

(c) (i)

MRS WAMARUA'S FARM

PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31/12/2020

Purchases and Expenses	**Kshs.**	**Sales and Receipts**	**Kshs**
Opening Valuation	60,000	Pig sales	70,000
Wages	50,000	Maize sales	40,000
Equipment	70,000	Piglet sales	42,000
Drugs	25,000	Closing Valuation	90,000
Pig feeds	30,000		
	235,000		
Profit	**7,000**		
TOTAL	**242,000**		**242,000**

KANDARA
AGRICULTURE
MARKING SCHEME
PAPER 2

1.(a) Notifiable disease is a highly contagious and infectious diseases whose outbreak must be reported in police / livestock authority. (1 mark)

(b) Name two notifiable diseases of cattle (½x2=lmark)

- Rinder pest
- Foot and mouth disease
- Newcastle
- African swine flu
- Gumboro
- Fowl pox

2. **Distinguish between cropping and harvesting in fish. (2 marks)**
Cropping is selective removal of fish of marketable size from the pond; while harvesting is removal of all fish from a pond
Mark as a whole

3. Give four faults in eggs that are detected during egg candling (½x4=2mark)

- double yolk
- meat spot
- hair cracks
- broken egg shell
- very porous egg shell
- very small size of air space

4. Give two reasons for maintaining tools (½x2=lmark)

- To make them efficient
- To make the last long
- To avoid injury
- To avoid damage

5.a) Give two roles of litter in deep litter poultry house (½x2=lmark)
Absorb moisture
keep the floor warm

(b) State one role of footbath in poultry house (1mark)
To disinfect the feet of the farmer

6. Name two cultural uses of livestock (½x2=lmark)

- Status symbol
- Medium of exchange
- Social ceremony
- Recreation purpose

7. Mention four advantages of embryo transplant (½x4=2mark)

- possible to implant embryo from a high quality female to less quality female hence improving performance of off springs.
- Stimulates milk production in female that was not ready to produce
- A highly productive female can be spread over a larger area to benefit many farmers.
- It is easier to transport embryo in test tubes than the whole animal
- Embryo can be stored for long periods awaiting availability of a recipient female.

8. Give functional difference between the following tools

(a) Stock and die and pipe cutter (1mark)
Stock and die —used for cutting threads on pipes **Pipe cutter** — used for cutting PVC pipes

(b) Ball pein hammer and claw hammer (1mark)
Ball pein hammer — used for riveting and striking the head of cold chisel /straighten bent metal surface. **Claw hammer** —used for driving and removing nails from wood /straightens bent nails

9. State four structural requirement of calf pen (½x4=2mark)

- Concrete floor
- Adequate space
- Single housing
- Proper lighting
- Proper drainage
- Draught free
- Leak proof roof

10. Signs of furrowing in pig (½x4=2mark)

- Restlessness
- Vulvas swells and reddens
- Udder becomes full with a milky substance
- Sow starts to build a nest by collecting some bedding at one corner

10. Two method of restrain animals (½x2=1mark)

- a crush

o ball ring and a lead stick
o with halters
o use of lead yoke
o ropes

12. State four reasons for castrating piglets (½x4=2mark)

- Make boars docile
- Control inbreeding
- Improve quality of pork/bacon
- Hasten fastening/weight gain/growth rate
- Control breeding
- Control breeding diseases

13 a) **.Give four effects of internal parasites that are harmful to livestock. (½x4=2mark)**

- Damage internal organs
- Pot belly
- Indigestion
- Emaciation
- Block internal organs
- Anaemia

14. State four symptoms of rinderpest disease. (½x4=2mark)

- Fever
- Staring coat
- Discharge from the mouth and nose
- Watery eyes/lachrimation
- Diarrhoea & dysentry
- Red mucous membranes with ulcers
- Teeth grinding
- Emaciation
- Tiredness / inactivity.
- Dullness
- Loss of appetite

15. Give four reasons why farmers steam up dairy cattle. (½x4=2mark)

- Ensure birth of a healthy calf
- Build-up energy for parturition
- Increase and maintain high milk yield after birth
- Stimulate growth of alveoli cells

- Promote good health of cow/ mother
- Provide nutrients for maximum growth of foetus

16. Outline two ways of maintaining good health in livestock. (½x2=1mark)

- Proper selection and breeding
- Proper sanitation/proper disposal of carcass
- Regular vaccination
- Imposing quarantine
- Proper feeding/nutrition
- Control of internal parasites/drenching/deworming
- Timely treatment of sick animals
- Control of vectors/external parasites/dipping acc specific methods of external parasite control
- Proper housing
- Use of prophy lactic drugs e.g coccidiostats

17. Name four methods of dehorning. (½x4=2mark)

- Use of dehorning wire/saw
- Use of rubber band & elastrator
- Use of dehorning collodion
- Use of caustic potash
- Use of disbudding iron

SECTION B 20 MARKS

18a) Label the part labelled A,B,C and D (½x4=2mark)

- A-Aveoli
- B-Gland cistern
- C-Teat Cistern
- D- Teat

b) Names two hormones that control milk-let down in a dairy cow (1x2=2marks)

- Oxytocin
- Adrenalin

c) Application of antibiotic into teat canal after drying off the cow to control mastitis. **(1mark)**

19. The diagram below illustrates a method of identification in livestock production. Use it to answer the questions that follows.

a. Name the type of identification illustrated above. (1mark)

Ear notching**.**

b. Give the identification number of the animal illustrated in the diagram above. (1mark)

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Name the tool used to carry out the practice. (1mark)

Ear notcher

c. State two reasons for carrying out identification of the animals. (1x2=2marks)

- Allows selection for breeding.
- Enables culling of low producing animals.
- Facilitates appropriate treatment of animals.
- Makes it easy to identify animals that deserves special feeding. Eg. Flushing.
- Stolen animals are easily recovered.
- Allows good keeping of animal records.

20. The diagram below is a farm structure for storing grain.

a) **Identify the farm structure. (1mark)**

Traditional granary

b) **State the function of the part labelled L**. **(1mark)**

Prevent entry of rats into the store.

c) **State one disadvantage of the roofing material used in the farm structure. (1mark)**

Prone to insect damage, fire risk

d) State two ways in which the structure is made ready for grain storage. (1x2=2 marks)

Cleaning

- Dusting
- Clearing vegetation around granary
- Repairing broken parts
- Replacing broken parts/worn out parts

21. **Below are illustrations of farm tools labeled A,B,C and D. Study them and answer questions that follow**.

a) Give the correct name of each of the tools illustrated above. (½x4=2mark)

A: Elastrator
B: A rake
C: Plumb bob
D: Secateur

b) How tools B maintained? (1mark)

B: repair the broken handle, repair any broken or bent teeth, Oil metallic parts to prevent rust, store in a tool store.

c) State one proper use of each of the tools A and C. (2marks)

A: To enlarge the rubber ring during; castration of small livestock, dehorning of livestock and docking of lambs
C: to check for perpendicularity of the walls in a building

SECTION C 40 MARKS
ANSWER ONLY TWO QUESTION

22**a) Factors affecting digestibility of food in livestock**
Stating 1 mark explanation 1 mark = 8 marks

- Chemical composition of the feed e.g. % of lignin or cellulose will influence digestibility
- The form in which the feed is offered to the animal e.g. crushed maize is more digestible than whole grain.
- The species of the animal e.g. the digestibility of grass is higher in sleep than in Pigs.
- The ratio of energy to protein will affect digestibility. The higher the ratio the lower the digestibility.
- The quantity of feed already present in digestive system of animal

b) Explain seven essential of clean milk production (1x7=7 marks)

- Healthy milking heard .-Should be free from milk-borne diseases such as brucellosis‘ and tuberculosis which is easily transmitted to man
- Clean milking cows . -The flanks underline and the whole udder should be washed and dried thoroughly before milking
- Healthy and clean milk –man .- A milker suffering from any contagious diseases should not be allowed to milk or handle milk
- Clean milking shed . -milking she or palour should be kept clean ,free from dust or odours
- Cleaning milking utencils . – should be seamless, smooth with joint filled to facilitate easy cleaning
- Milking filtration /cooling and storage .-milk should filtered and cooled down to 5c immediately after milking to slow bacterial multiplication
- Avoid flavor in milk. Bad flavor in milk are caused by foodstuffs and ovulation should avoided before milking.

c) Disadvantages of Natural method of mating 1x5=5 marks

- High chances of in breeding or in breeding is not controlled.
- High chances of breeding disease transmission ie brucellosis or parasites such as trichonomas spp
- Males require extra pasture to feed on.
- Large males can injure small females.
- A lot of semen is wasted as single ejaculation produce semen that can serve several cows.

- It is cumbersome and expensive to transport a bull to hot areas to serve cows.

23.a) Control measures of cannibalism (8 x 1= 8 marks)

- Avoid bright light in the house
- Avoid overcrowding
- Provide balance diet
- Contol external parasites
- Hang vegetables in the house to keep birds busy
- Debeak birds which peck at others
- Cull perpetual cannibals
- Cull birds with prolapse
- Provide adequate equipment feeders, water, perches
- Avoid introduction of new birds in the stock

b) State maintenance practices of a mouldboard plough (5 x 1=5marks)

- Lubricate the rolling parts e.g the wheel bearings
- Paint scratched parts of the plough
- Sharpen the share or replace if worn out
- Check all lose nuts and bolts and replace where necessary
- Clean the implement after each days work to remove soil, mud and trash
- For long storage, keep under a shed and apply lubricants

c) Importance of fences in a farm any(7x 1=7marks)

- Fences mark boundaries
- They keep out unwanted visitors e.g thieves and wild animals
- Live fences act as windbreaks reducing wind erosion and lodging of weak stem crops e.g. maize
- They separate crop fields from pastures in mixed farming
- They divide pasture lands onto paddocks facilitating paddocking grazing system
- Enhances control of livestock parasites and livestock diseases by restricting movement of livestock
- Fences help to isolate sick animals from the rest of the herd to avoid the spread of diseases
- They enable the farmers to control breeding by rearing different animals in different paddocks
- They provide security to the homestead and farm animals

24. **a) Describe the process of digestion in the rumen. Any point (1x5=5marks)**

- ✓ This is the first stomach compartment
- Food is temporarily stored in the rumen before regurgitation to the mouth for further chewing
- In this chamber, the food is acted upon by micro- organism
- During temporary storage, the food is fermented a condition necessary for microbial digestion.
- There is synthesis of vitamin **B** complex ie VitB1,Vit B2,Vit B6 and Vit K.
- Synthesis of amino acids from ammonia gas
- Breakdown of carbohydrates and cellulose to carbon dioxide and volatile fatty acids ie acetic , butyric propionic and formic acids.
- Ammonia gas and volatile fatty acids are absorbed through the walls of rumen. Gases ie methane, hydrogen and carbon dioxide are released through belching.

b) Describe short term tractor servicing. (5x1=5marks)

- Check engine oil daily using a dip stick and maintain oil level;
- Check fuel level at start of every days work and add if necessary;
- Check water level in radiator and top up if low;
- Check electrolyte level daily and if low top up;
- Tighten loose nuts and bolts daily and replace lost ones;
- Large sediments from sediments bowl should be removed;

- Check tyre pressure daily and adjust accordingly;
- Check fan belt tension to ensure it deflects between 1.9 cm – 2.5 cm when pushed;
- Grease brake shaft bearing and maintain brake fluid level;

c) Explain five maintenance practices of a wheel barrow. (1x5=5marks)

- Grease wheel axle to reduce friction.
- Paint metallic parts to avoid rusting
- Repair/replace broken/worn out parts respectively for efficient working
- Clean after use to remove dirt
- Proper storage to avoid rusting

d) State five symptoms of trypanosomiasis attacked animals (any 1x5=5marks)

- high temperature or fever
- The animal is observed to be dull
- Loss of appetite
- General weakness of the body
- Lachrimation which leads to blindness
- Diarrhea
- Rough coat sometimes no hair and cracked skin
- Swelling of parts of the belly
- Milk production decreases
- Loss of hair at tail and
- Anemia
- Abortion may occur in pregnant females due to high body

KASSU EXAMINATION
443/1
AGRICULTURE
PAPER 1
2 Hours

SECTION A (30 MARKS)

Answer all the questions in this section in the spaces provide.

1. Give **two** roles of agriculture in industrial development. (1mk)
2. Differentiate between **mixed cropping** and **intercropping**. (1mk)
3. List **four** physical weathering agents in soil formation process. (2mks)
4. List **four** farming practices that destroy soil structure. (2mks)
5. Outline **four** effects of siltation in dams. (2mks)
6. (a) Give **two** main methods of classifying weeds (1mk)
   (b) State **two** disadvantages of controlling weeds by tillage method. (1mk)
   (c) State **four** factors that affect selectivity and effectiveness of herbicides. (2mks)
7. Outline **two** methods used by farmers to harden-off seedlings in a nursery bed. (1mk)
8. Give **four** disadvantages of minimum tillage. (2mks)
9. State **four** characteristics of tree recommended for agro-forestry. (2mks)
10. State **three** reasons for staking tomatoes in the field. ($1^1/_2$mk)
11. Give the use of each of the following financial document.

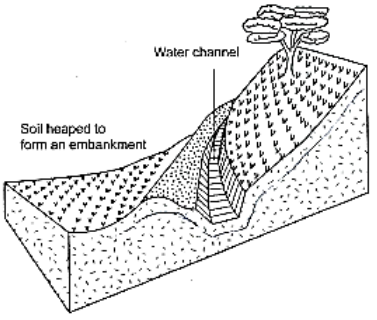
(i) **An invoice** (1mk)

(ii) **A local purchase order** (1mk)

12. Give **four** disadvantages of using farm yard manure. (2mks)
13. Give **four** reasons why seed selection is important in crop production. (2mks)
14. Outline **four** advantages of mixed stand pasture. (2mks)
15. (a) Give a reason why manure application is not recommended in **carrot production**.
    (b) Name **two** pests that affect cabbages. (1mk)
16. Give a reason why striga weed is referred to as a parasitic weed. ($^1/_2$mk)
17. State **three** advantages of organic mulch in crop production ($1^1/_2$mk)

SECTION B (20 MARK)

18. The illustration below indicate a type of soil and water conservation measure. Study it and answer questions that follow.



(a) Identify the structure illustrated above. (1mk)

(b) State **two** areas where the structure above discharge its water to (2mks)

(c) A part from the above name two other structural physical soil and water conservation measures. (2mks)

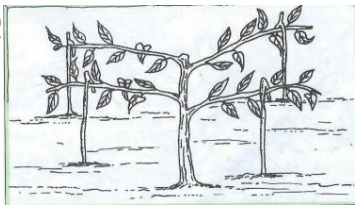
19. Study the farm record illustrated below and answer questions that follow.

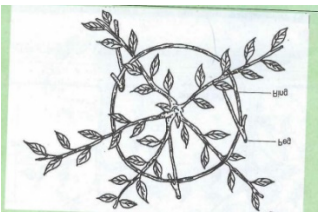
Name of person	Pay roll no.	Days					Days worked	Rate of pay (Ksh)	Total pay (Ksh)	Signature of workers
		1	2	3	4	5				
Mrs X	08						25	@ 100/=	2500/=	
Mr Y	09						25	@ 100/=	2500/=	

(a) Identify the type of record illustrated above. (1mk)
(b) Give **four** pieces of information contained in invoice. (4mks)

20. Study the illustration of a field practice illustrated below and answer questions that follow.

Q





R

(a) Identify the illustrations labeled **Q** and **R** above (2mks)
(i) Q
(ii) R
(b) Give reason for carrying out the practice above. (1mk)
(c) Name **two** methods of prunning (2mks)

21. A farmer was asked to apply fertilizers as follows **200kg/hac** of **DSP (40%P_2O_5, 150kg/hac** of Muriate of potash **60% K_2O, 150kg/hac** of sulphate of ammonia **20%N**.
(a) How much **P_2O_5** did the farmer apply per acre? (1mk)
(b) How much **K_2O** did the farmer apply per acre? (1mk)
(c) How much Nitrogen (N) did the farmer apply per hectares? (1mk)
(i) Calculate the amount of filler material in the double superphosphate (DSP) used above. (1mk)
(ii) Differentiate between **complete** and **incomplete** compound fertilizer. (1mk)

SECTION C (40 MARKS)

22. (a) Describe the production of beans under the following sub-headings.
(i) **Planting** (3mks)
(ii) **Field Management practices** (4mks)
(b) i) Describe the procedure of **harvesting pyrethrum**. (3mks)
ii) Give one precaution observed when harvesting pyrethrum. (1mk)
c) Give **five** importance of grafting oranges. (5mks)
d) Explain **five** factors that determine the choice of type of irrigation method. (5mks)

23. a) Explain **five** ways in which biotic factors influences crop production negativity. (5mks)
b) Outline **seven** functions of a farm manger. (7mks)
c) Explain **eight** cultural measures of controlling pests. (8mks)

24. a) State and explain **four** factors that determine elasticity of demand. (8mks)
b) State **five** advantages of timely planting. (5mks)
c) Explain **seven** effects of fragmentation and sub-division of land in Agriculture. (7mks)

KASSU JET MOCK
443/2
AGRICULTURE
TIME: 2 HOURS
Paper 2

SECTION A (30 MARKS)

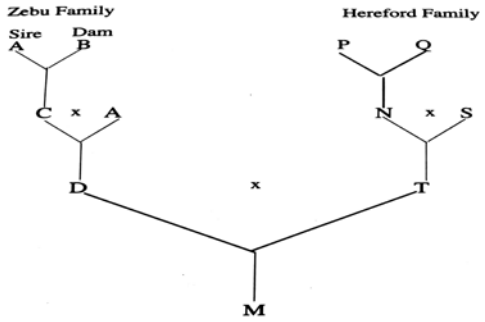
1. Give the appropriate term used to refer to each of the following.
a) Young one of a rabbit.
b) Mature female cattle.
2. State **three** factors that determine the effectiveness of an acaricide.
3. Outline **four** factors considered when formulating a livestock ration.
4. List **three** methods used in selection of breeding stock in livestock production.
5. State how each of the following practices help to control livestock diseases.
a) Quarantine
b) Prophylactic measures.
6. State **four** reasons for seasoning timber. (2mks)
7. Give **two** processes carried out by a combine harvester when harvesting wheat. (1mk)
8. State **two** functions of lubrication system in a tractor. (1mk)
9. State **four** factors that stimulate milk let-down in a lactating cow. (2mks)
10. Give **two** reasons for using litter in a poultry house. (1mk)
11. Give **four** conditions that reduce the quality of eggs for hatching. (2mks)
12. State **four** ways of restraining cattle during routine management. (2mks)
13. Give the use of each of the following workshop tools.
a) Cold chisel.
b) Rip saw.
14. Give **four** reasons why colostrum is important in calf feeding. (2mks)
15. State **four** harmful effects of lice in pigs. (2mks)
16. Give **four** reasons for swarming of bees. (2mks)
17. State **four** factors that lead to an increase in the respiratory rate of livestock. (2mks)
18. Outline **four** signs of heat in rabbits. (2mks)
19. Name **two** nutritional diseases in cattle. (1mk)

SECTION B (20 MARKS)

20. The photograph below represents an external parasite of livestock. Study it carefully and answer the questions that follow.

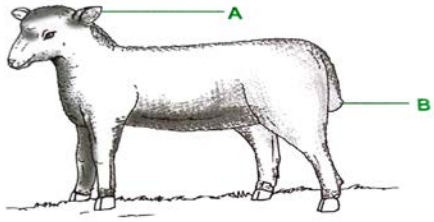
a) Identify the parasite. (1mk)
b) What is the economic importance of the parasite to a livestock farmer? (1mk)
c) State **three** non-chemical methods of controlling the above parasite. (3mks)

21. The illustration below shows two different livestock families. Use it to answer the questions that follow.



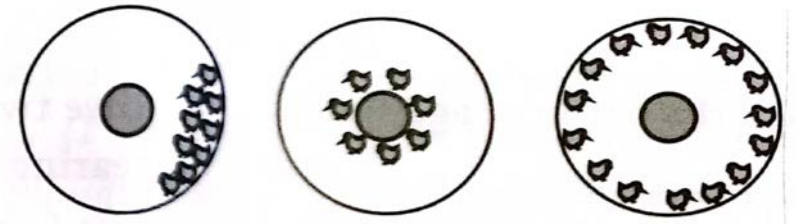
a) Identify the breeding system between
i) **C** and **A** (1mk)
ii) **D** and **T** (1mk)
b) State **two** advantages of the breeding system identified in **a) ii)** above (2mks)
c) What name is given to offspring **M.** (1mk)

22. Below is a diagram of sheep. Study it carefully and answer the questions that follow.



a) Name the management practice carried out in the part labelled B if the sheep is an ewe. (1mk)
b) Name one tool in each case that can be used to carry out operations on the parts labelled **A** and **B.**
c) What is raddling as used in the management of sheep. (1mk)

23. The following illustration show the behavior of chicks at different temperatures in a brooder



C D E

a) Explain the temperature conditions in each of the four diagrams C, D, E (3mks)
b) Draw a diagram to show the behavior of the chicks if the temperature in the brooder is the right one.
c) Explain why the brooder guard is rounded. (1mk)

SECTION C (40 MARKS)

24. a) Discuss foot and mouth disease under the following sub headings:
i) Causal organism (1mk)
ii) Livestock species attacked (2mks)
iii) Symptoms of attack. (4mks)
iv) Control measures. (3mks)
b) Explain **five** factors that affect digestibility of food in livestock. (5mks)
c) State **five** advantages of a four stroke cycle engine. (5mks)

25. a) Explain the procedure of establishing a fish pond. (5mks)
b) Outline **five** differences between exotic cattle breeds and indigenous cattle breeds. (5mks)

c) State the features of an ideal calf pen. (5mks)
d) Outline **five** symptoms of round worm infestation in cattle. (5mks)

26. a) Describe the preparation and management of a brooder before and after the arrival of day old chicks. (5mks)
b) Describe the uses of various equipment that are used in honey harvesting. (5mks)
c) Give **five** advantages of farm mechanization. (5mks)
d) Outline **five** factors considered when selecting construction materials. (5mks)

KASSU EXAMINATION
AGRICULTURE
PAPER 1
(443/1)
MARKING SCHEME

SECTION A (30 Marks)

1 Role of Agriculture
- Provide market for industrial goods
- Provide raw materials that are used in industries
- Source of income (1mk)

2 Mixed cropping is the growing of two or more crops in the same field but in specific sections at the same time while intercropping is the growing of two or more crops in the same field at the same time.

3 Physical weathering agents
- Temperature
- Wind
- Water
- Ice/glaciation (½ x4 = 2mks)

4 Farming practices that destroy soil structure
- Using heavy machinery on wet soils
- Over cultivation
- Burning of vegetation
- Too much use of agro-chemicals (½ x 4 =2mks)

5 Effects of siltation in dams
- Causes water pollution
- Interferes with hydro- electric power generation.
- Leads to decline in fish production in dams
- Reduction of water volume (½ x 4= 2mks)

6(a) Methods of classifying weeds
- Basing on growth cycle
- Basing on plant morphology (½ x 2= 1mk)

b) Disadvantages of controlling weeds by tillage:
- Tillage destroys soil soil structure
- Tillage creates suitable conditions for weeds to germinate
- It laborious and expensive especially if the land to cultivate is large.
- Excessive cultivation leads to loss of water and soil erosion
- Excessive cultivation leads to damage to crop roots
- Perennial weeds may not effectively be controlled. (½ x 2 = 1mk)

c) Factors that affect selectivity of herbicides
- Stage of plant growth
- Plant morphology and anatomy
- Herbicide characteristics
- Herbicide concentration
- Formulation
- Method of application
- Mode of action
- Environmental factors (½ x 4 = 2mks)

7 Methods of hardening off seedlings
- Gradual reduction of shade
- Gradual reduction of watering per days (½ x 2 = 1mk)

8 Disadvantages of minimum tillage;
- Leads to development of hardpan layer
- Build up of weeds

- Encourages build up of diseases and pests
- Reduced water infiltration.
- Where burning was used to clear land, soil fertility will be lost (½ x 4 = 2mks)

9 Characteristics of trees recommended for agroforestry:
- Fast in growth
- Deep rooted
- Nitrogen fixing
- Good by products
- Should not be heavy feeders (½ x 4 = 2mks)

10 Reasons for staking tomatoes,
- Enhance production of clean fruits
- Helps in controlling diseases
- Facilitates spraying of the crop/weeding and harvesting of the crop/ pruning
- Prevent infestation by soil borne pests (½ x 3= 1½ mks)

11. (a) An invoice is issued to inform the buyer of goods delivered and debits the buyer. (1mk)
b) A Local purchase order is issued to a trading business to supply specified goods. (1mk)

12 Disadvantages of Farm Yard manure:
- They have low nutritive value per volume, hence used in large quantities (bulky)
- Its laborious in application and transport
- They spread weeds
- They lose nutrients through leaching and volatilization if poorly stored
- If used when not fully decomposed the crops cannot benefit since it releases nutrients slowly and it also scorches the plants.
- It's not easy to determine the nutrient present in the manure. (½ x 4 = 2mks)

13 reasons for seed selection:
- To get seeds which are free from pests and diseases
- To get seeds which are suitable to the environment, ecological conditions
- To get seeds which will give high yields
- To get materials which are pure
- To be able to get seeds which of the right shape and size
- To get and use seeds which have high germination percentage. (½ x 4 =2mks)

14 Advantages of mixed stand pasture:
- Livestock are able to get high quality pasture both in forage quality and quantity
- Avoid total loss resulting from pest and disease attack
- There is maximum use of soil as different crops have different nutrient requirement
- There is better weed control
- There fewer cases of bloat in animals which graze on mixed pastures
- There is economic use of nitrogen fertilizers as legumes legumes will fix nitrogen from the air
- Fodder plants can be grown with plants for human consumption ie legume grown with millet.

15 a) It encourages forking of carrots which reduce quality. (½ mk)
b) Pests that affect cabbages are:
- Cutworms
- Aphids
- Cabbage sawfly
- Mouse birds
- Caterpillars (½ x 2= 1mk)

16 It depends on cultivated crops such as maize. (½ mk)

17 Advantages of organic mulch
- Organic mulch improves soil fertility by releasing nutrients after decomposition
- Organic mulch produces humus which improves soil structure and water retention capacity
- Organic mulch controls soil erosion by covering the soil
- Organic mulch insulates the soil thus modifying soil temperature.

- Organic mulch is cheap to acquire.
- The material is locally available. (½ x 3 = 1 ½ mks)

SECTION B (20 MARKS)

18. (a) Cut-off drain
(b) it discharges its water into
- Natural water ways
- Artificial water ways
- Rocky ground
- Grass land

(c) Two other physical structures
- Trash or stores lines
- Filter steps
- Bunds
- Gabion/ porous dams
- Ridging
- Dams and Reservoirs
- Teracess

19. Farm records
(a) Master roll record/ labour record (1mk)
(b) Pieces of information contained in a invoice
- Date of transaction
- The people involved in the transaction
- Type of goods and services
- Price per unit of the goods.
- Type and quantities of goods delivered
- Total amount of money involved
- Invoice serial number
- Terms of payment (1x 4 = 4mk)

20. (a) Q- Individual hooked pegs method (1mk)
R – Ring and pegs pegging method (1mk)
b) Reasons for pegging
- To ensure lateral growth and aped to form the frame for wide plucking table. (1mk)

c) Methods of pruning coffee
- Single stem pruning (1mk)
- Multiple (1mk)

21 a) P2O5 applied per hectare from 200kg of DSP

$\frac{40}{100}$**x200=80Kg/hac P_2O_5**(1mk)

b) K_2O applied per hectare from 150 kg of nutrients of Potash

$\frac{60}{100}$**x150=90Kg/hac K_2O** (1mk)

c) N applied per hectare from 150kg/hac sulphate of ammonia

$\frac{20}{100}$ **x150=30Kg/hac K_2O** (1mk)

b) Filler material in the double supper phosphate (DSP) is:
Active ingredient is :
80kg/hac of P2O5
1 Bag of 100kg DSP has 40%P2O5
Filler material is 60 kg. Therefore the 200kg of fertilizer has a filler material of,
60 x 2 = 120kg. (1kg)

c) Complete compound fertilizer is that fertilizer which has the three of the primary macro nutrients (N P K) while incomplete fertilizer is that which has only one of the primary macro nutrients (N P K). (1MK) Mark as a whole.

SECTION C (40 MARKS)

22. (a) Bean production under the following sub headings planting

- Should be planted at the onset of rains and planting may be delayed during the long rains to avoid rotting before harvesting.
- Planting is done by placing 2 or 3 seeds per hole.
- Planting is done in shallow furrows
- Planting is done manually and dibbing method can be used.
- Spacing used is 30 – 45cm x 15cm
- The seed rate is 50 – 60 kg/hac
- Ammonium phosphate should be applied at the rate of 250 kg/hac
- Fertilizer is placed in the furrow before planting.

ii) Filed Management practices

- Gapping
- This should be done immediately after germination
- Weeding should be done before flowering to void knocking down flowers
- Weed when the field is dry to avoid spreading diseases
- Shallow weeding is done and the field should be kept clean.
- Hard weeding is done
- Thining – done tro remove excess seedlings to avoid overcrowding for green pod production

iii) Pest control

- To produce high yield and quality beans pests should be controlled
- The common pests are aphid's ben bruchid, spotted borer, American bollworm and golden ring moth etc.
- Methods used to control include, spraying with appropriate insecticide
- Cultural measures can also be used
- Disease control
- Common diseases includes bean rust anthracnose, blight mosaic and angular leaf spot. These are controlled by planting health materials uprooting spraying with appropriate fungicides and destroying infected crop residues.

(b) Procedures of harvesting pyrethrum

- Pick flowers selectively by picking only those with horizontal petals (ray flower) with two three rows of disc florets open.
- Picking intervals is 14 – 21 days.
- Flowers are picked by twisting the heads and ensure no stems are attached
- Put picked flowers in open woven basket to allow ventilation
- Tins or polythene bags should not be used.

(ii) Precaution observed when harvesting pyrethrum.

- Put picked flowers in woven basket
- Avoid use of tins or polythene bags because this encourages fermentation.
- Avoid picking up wet flowers
- Do not compact flowers during picking because it encourages heating up and fermentation.

(c) Factors determine choice of irrigation method

- Topography/slope of the land
- Soil type
- Tyre of crop to be irrigated
- Amount of water available
- Distance of the source of water to the field
- Capital available, skills available

- Climatic factors of the area
- Technology available

23. (a) Negative effects of biotic factors
- Pests – attcatk crops by eating plant parts
- Piecing and sucking sap and introducing disease micro – organism.
- Weeds – compete for growth requires space, nutrients, moisture and light.

(b) Functions of farm manager
- Short-term planning for quick decision to avoid losses
- Long-term planning collecting relevant information gathering
- Information gathering
- Budgeting
- Compairing standards
- Detect waekneses and coustraints and find ways of overcoming them.
- Keeps up to date farm records and uses them in daily running of the farm.
- Implements farm decisions
- Guiding and supervises the implementation of the farm plan.
- Compares performance of the farm with that of other farms.
- Makes predictions of the farm business
- He is the accounting officer of all financial transactions of the farm.

(c) Cultural measures of controlling pests
- Timely planting
- Timely harvesting
- Proper tillage
- Close season
- Trap cropping
- Crop rotation
- Planting resistant crop various
- Filed hygiene
- Alteration of Environment condition.
- Crop Nutrition
- Destruction of the alterative hosts
- Use of clean planting materials
- Proper spacing
- Use of organic manure
- Irrigation, flooding of fields
- Chemical control

24. (a) Factors determining elasticity of demand
- The availability of substitutes
- Degree of necessity
- The number of uses a product can be put to
- Time lag
- Time span
- Proportion (1 x 8 = 8mks)

(b) Advantage of timely planting
- Disease and pest control
- Benedict from nitrogen flash
- Weed control
- Maximus rainfall by the crop
- Crop matures early when market prices are high/high demand.
- No competition for labour/ get cheap labour

- Crop will be harvested during appropriate weather condition

(c) Effects of land fragmentation and sub-division

- Time is wasted while travelling from and holding to the other
- Control of weeds and pests is difficult
- Difficulties of following a sound farm plan arising from the distance between fragments.
- Difficulties in the supervision of the scattered plots
- Control of livestock parasites and diseases
- Difficulties in carrying out various soil conservation measurers
- It is difficult for the farmers to restrict grazing in one holding only due to size and shape of parcel.
- Difficulties in offering agricultural extension advice.
- Agricultural productivity remains poossr whih results in low standards of living.

KASSU JET MOCK
Paper 2
MARKING SCHEME
SECTION A (30 MARKS)

1. Give the appropriate term used to refer to each of the following.

c) Young one of a rabbit.
- Kindling.

d) Mature female cattle.
Cow.

2. State **three** factors that determine the effectiveness of an acaricide.
- Active ingredients of the acaricide/ ability to kill ticks.
- Persistence of acaricide/stability of the acaricide/ability to remain effective after fouling with hair, mud, dung and dirt.
- Concentration of the acaricide in the mixture.
- Weather condition during application.
- Thoroughness/skill of application.

3. Outline **four** factors considered when formulating a livestock ration.
- Nutrient requirements of the animal.
- Age of the animal.
- Type of animal whether ruminant or non-ruminant.
- Availability of feedstuff.
- Cost of the feedstuff.

4. List **three** methods used in selection of breeding stock in livestock production.
- Mass selection
- Progeny testing
- Contemporary comparison

5. State how each of the following practices help to control livestock diseases.

a) Quarantine
- By restricting animal movements and their products from and into the affected areas and in the event of an outbreak of a notifiable disease thus preventing the spread of the disease.

b) Prophylactic measures.
- By preventing the occurrence of the disease using preventive measures.

6. State **four** reasons for seasoning timber. (2mks)
- To prevent warping.
- To prevent fungal infestation/rotting.
- To resist weather conditions.
- To resist insect damage.

7. Give **two** processes carried out by a combine harvester when harvesting wheat.
- Threshing of the grains.
- Cleaning of the grains.

8. State **two** functions of lubrication system in a tractor.
- It helps to increase the efficiency of the machine and reduces the rate of wear and tear of moving parts.
- It reduces the heat created by the rubbing surfaces and act as a seal between them.
- Acts as a cleaning agent as it washes off all dust, dirt, soot and metal chippings from the oil paths to the sump.
- Oiling prevents rusting of stationary machines.

9. State **four** factors that stimulate milk let-down in a lactating cow. (2mks)
- Washing the udder with warm water.
- Allowing the calf to suckle for a while.
- Feeding the cow during milking.
- Regular milking time.
- Sound associated with milking.

- Massaging the udder when washing it.
- Presence of milkman/milking parlour.

10. Give **two** reasons for using litter in a poultry house. (1mk)
- Helps to keep the poultry house warm.
- Helps to keep the poultry house dry by absorbing moisture from bird droppings.

11. Give **four** conditions that reduce the quality of eggs for hatching. (2mks)
- Small size
- Candling qualities (Double yolk, hard shell, blood spots)
- Not fertilized.
- Cracked shell
- Dirty eggs
- Age more than 10 days old.
- Rough shell

12. State **four** ways of restraining cattle during routine management. (2mks)
- Use of a crush.
- Use of a head yoke.
- Use of ropes /halters/casting
- Use of lead stick and bull ring.
- Use of holding/isolation pen/yard.

13. Give the use of each of the following workshop tools.

c) Cold chisel.
- Cutting thick sheets of metal.

d) Rip saw.
- Used for cutting wood along the grains.

14. Give **four** reasons why colostrum is important in calf feeding. (2mks)
- Its highly digestible
- It's highly nutritious and contains vitamins for growth and disease resistance.
- Has antibodies that enable the calf to resist early disease infection
- Its good in cleaning the bowels of the calf (has a laxative effect)
- It is highly palatable.

15. State **four** harmful effects of lice in pigs. (2mks)
- Causes irritation to the skin.
- Heavy infestation will cause loss of health in animals.
- Poor feeding and emaciation.
- Loss of production.
- Restlessness and anaemia conditions.

16. Give **four** reasons for swarming of bees. (2mks)
- Shortage of food and water
- Outbreak of diseases and parasites
- Damage of brood and combs.
- Lack of adequate ventilation
- Dampness and bad smell
- Sick or infertile queen.
- Overcrowding

17. State **four** factors that lead to an increase in the respiratory rate of livestock. (2mks)
- Large body size
- High amount of exercise done
- High degree of excitement.
- High environmental temperature.

18. Outline **four** signs of heat in rabbits. (2mks)
- Restlessness
- Frequent urination
- Swollen vulva.

- The doe throws itself on its sides
- She rubs herself against the wall or any other solid object.
- The doe tries to contact other rabbits in the next hutch by peeping through the cage walls.

19. Name **two** nutritional diseases in cattle. (1mk)
- Scours. Milk fever.

SECTION B (20 MARKS)

20.

a) Identify the parasite. (1mk)
- Tsetsefly (Glossina spp)

b) What is the economic importance of the parasite to a livestock farmer? (1mk)
- Transmits trypanosomiasis/nagana/ sleeping sickness.

c) State **three** non-chemical methods of controlling the above parasite. (3mks)
- Bush clearing to destroy breeding places of flies.
- Sterilizing of the male tsetse flies by use of chemicals eg radio isotopes.
- Creating buffer zones near game reserves thereby preventing the transmission of infection from wild animals to livestock.
- Trapping of the flies

21. The illustration below shows two different livestock families. Use it to answer the questions that follow.

a) Identify the breeding system between

i) **C** and **A** (1mk)
- Close breeding/parent sib mating.

ii) **D** and **T** (1mk)
- Cross breeding.

b) State **two** advantages of the breeding system identified in a) ii) above (2mks)
- Heterosis (hybrid vigour) can be exploited. Hybrids perform better than the original breeds.
- It helps to establish grade animals.
- It can be used to change the breed ie from one breed to another.
- It is a much quicker method of producing the required animal.

c) What name is given to offspring M. (1mk)
- Hybrid.

22. Below is a diagram of sheep. Study it carefully and answer the questions that follow.

a) Name the management practice carried out in the part labelled B if the sheep is an ewe.
- Docking

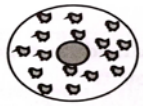
b) Name one tool in each case that can be used to carry out operations on the parts labelled A and B.
A- Ear notcher
B- Elastrator and rubber ring, Burdizzo and sharp knife, Hot iron.

c) What is raddling as used in the management of sheep. (1mk)
This is the practice of fitting the rams with breeding chutes or ram harness on the briskets which are painted in different colours during breeding. Alternatively, the rams can be painted with different colours on the underside.

23. The following illustration show the behavior of chicks at different temperatures in a brooder

a) Explain the temperature conditions in each of the four diagrams C, D, E (3mks)
C-There is draught from the side directly opposite where the chicks have crowded.
D-It is very cold in the brooder. The chicks crowd around the heat source to get warmed.
E-There is too much heat in the brooder causing the chicks to move far away from the heat source.

b) Draw a diagram to show the behavior of the chicks if the temperature in the brooder is the right one. (1mk)



c) Explain why the brooder guard is rounded. (1mk)

- It helps to avoid overcrowding at one point which may lead to suffocation.

SECTION C (40 MARKS)

24. a) Discuss foot and mouth disease under the following sub headings:

i) Causal organism (1mk)

- Virus/ Enterovirus picorna

ii) Livestock species attacked (2mks)

- Cattle, sheep, goats and pigs.

iii) Symptoms of attack. (4mks)

- Drooling of saliva.
- Vesicles in the mouth, muzzle, feet, teats, udder and the rumen.
- Smacking of lips
- Kicking of the feet
- Lameness
- Abortion may occur.

iv) Control measures. (3mks)

- Vaccination.
- Quarantine
- Mass slaughter.

b) Explain **five** factors that affect digestibility of food in livestock. (5mks)

- Chemical composition of the feed eg % of lignin or cellulose will influence digestibility.
- The form in which the food is offered to the animal eg crushed maize is more digestible than whole grain.
- The species of the animal eg the digestibility of grass is higher in sheep than in pigs.
- The ratio of energy to protein will affect digestibility. The higher the ratio the lower the digestibility.
- The quantity of feed already present in the digestive system of an animal.

c) State **five** advantages of a four stroke cycle engine. (5mks)

- Produce high power and can do heavy farm work.
- They have an efficient fuel and oil utilization.
- They perform a wide range of farm operations.
- The engine is efficiently cooled with water thus allowing the production of large engine sizes.
- Exhaust gases are effectively expelled from the cylinders

25. a) Explain the procedure of establishing a fish pond. (5mks)

- Site selection
- Site marking eg inlet and outlet
- Clearing the land ie removing all the vegetation.
- Digging the pond-Soil is dug out upper side 0.5m deep and the lower side 1.5m deep.
- Constructing the dyke-This is the wall that is constructed all round the pond.
- Constructing the inlet, outlet and spillway.

e) Outline **five** differences between exotic cattle breeds and indigenous cattle breeds. (5mks)

Exotic cattle breeds	**Indigenous cattle breeds**
They have no humps.	They have humps
They have low tolerance to high temperatures. Are popular in cool climates of the Kenyan highlands.	They are fairly tolerant to high temperatures due to the presence of dewlap and thick hides.
They are highly susceptible to tropical diseases.	They have high tolerance to tropical diseases eg trypanosomiasis.
They have fast growth rates leading to early maturity.	They have a slow growth rate leading to late maturity
They are good producers of both meat and milk.	They have low production of both meat and milk due to inheritance of poor characteristics.
They cannot walk for long distances.	They can walk for long distances in search of food and water.

They have short calving intervals of one calf per year if well managed.	They have long calving intervals of more than 1 year.

c) State the features of an ideal calf pen. (5mks)

- **Should have concrete floors**-This makes cleaning easy
- **Should have adequate space-** for feeding, exercise and watering equipment.
- **Single housing**-The housing should allow only one calf per pen so as to prevent calves from licking each other which results in hair balls in the stomach and also controls the spread of worms and skin infection.
- **Proper lighting**-Allows enough light into the pen for synthesis of vitamin D.
- **Proper drainage**- Facilitates free flow of urine and water. Poor drainage causes dampness which pre-disposes the calf to infections.
- **Draught free**-The windward side should be completely solid to prevent cold winds which pre-dispose the calf to infections eg pneumonia.
- **Leak proof roof**-Wetness encourages disease infections eg pneumonia and scours.
- **Proper ventilation**-Allows free air circulation.

d) Outline **five** symptoms of round worm infestation in cattle. (5mks)

- Anorexia under heavy infestation
- Stiff dry coat or staring coat.
- Dehydration and a pale mucosa
- Eggs and adults are seen in feaces
- General emaciation
- The animal may have diarrhoea
- Anaemic condition where infestation is heavy.
- Pot bellies especially in young animals

26. a) Describe the preparation and management of a brooder before and after the arrival of day old chicks. (5mks)

- The brooder should be ready 2-3days before chicks arrive.
- All equipment's should be functioning.
- The brooder house and the brooder equipment should be thoroughly cleaned and disinfected.
- On arrival the chicks are fed on chick mash (20-22%DCP and vitamin A and D) for eight weeks.
- Provide plenty of water and check on the chicks regularly for the first two weeks.
- Chicks should be vaccinated at:
  - 2 weeks against gumboro.
  - 3-4 weeks against Newcastle.
  - 7 weeks against fowl typhoid.
  - Coccidiosis is controlled by giving coccidiostats through water and feed.
- Provide roosts at 6weeks for chicks to perch on.
- Introduce growers mash in the 7^{th} week which should be $\frac{1}{4}$ mixed with $\frac{3}{4}$ ration of chick mash.
- Remove chicks at 8weeks from the brooder and take them to the main poultry house.
- In the 9th week chicks are feed on grower's mash only.

b) Describe the uses of various equipment that are used in honey harvesting. (5mks)

- Protective gear eg overall, veil, gum boots, hand gloves protects the person harvesting from bee stings.
- Smoker-Used to introduce smoke into the bee hive.
- Hive tool- Used for cutting honey combs during harvesting. It is also used to separate the top bars.
- Honey container with a light cover used for placing honey after harvesting.
- Bee brush used for brushing off bees from the honey comb.

c) Give **five** advantages of farm mechanization. (5mks)

- Makes farm operations faster.
- Makes work easier and enjoyable/ reduce drudgery
- Improves efficiency as more work can be done within a short period of time.

- High quality job is done than human labour.
- It economizes on the use of labour.
- It increases production by benefiting from economies of large scale.
- Tends to encourage farmers to consolidate their land.
- Pest and disease outbreak can be controlled relatively in a shorter time.

d) Outline **five** factors considered when selecting construction materials. (5mks)

- Availability of the materials
- Cost of the materials.
- Suitability of the materials
- Suitability of each type of material to the prevailing weather conditions.
- Durability of the materials.
- Strength of the materials
- Workability of the materials

KIENI EAST
443/1
PAPER 1
TIME: 2 HOURS

SECTION A (30 marks)

Answer all questions in this section in the spaces provided

1. State **four** characteristics of extensive farming system (2 marks)
2. State **four** minimum tillage practices (2 marks)
3. State the meaning of **each** of the following terms as used in crop production.
   a). Thinning (1 mark)
   b). Pricking out (1 mark)
   c). Rogueing (1 mark)
4. Outline **four** sources of capital in the farm (2 marks.
5. State **four** factors that determine the stage of harvesting crops (2 marks)
6. State **four** roles of organic matter in sandy soils (2 marks)
7. Name **one** crop that is propagated by each of the following
   a) Stem tuber (½ mark)
   b) Split (½ mark)
   c) Slip (½ mark)
   d) Bulbil (½ mark)
8. Give **four** factors that can increase seed rate (2 marks)
9. State **two** ways by which soil pH. may affect crop production (1 mark)
10. Differentiate between monopoly and monopsony (2 marks)
11. State **four** disadvantages of communal land tenure system (2 marks)
12. Give **four** factors that influence the number of secondary cultivation operations in seedbed preparation (2 marks)
13. List **four** methods of farming (2 marks)
14. List **four** benefits of under sowing in pasture management (2 marks)
15. State **four** details that may be contained in an invoice (2 marks)

SECTION B (20 marks)

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

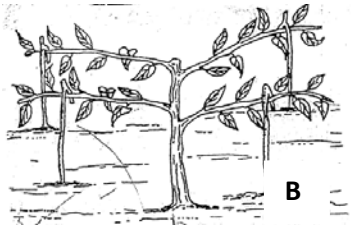
16. The images below represent one method of irrigation. Use them to answer the questions that follow.

a). Identify the irrigation method illustrated above (1mark)

b). State **four** advantages of the irrigation method illustrated above (4 marks)

17. The following are illustrations of tea pruning methods. Study them carefully and answer the questions that follow.


A

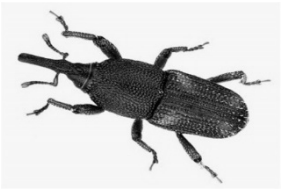

B

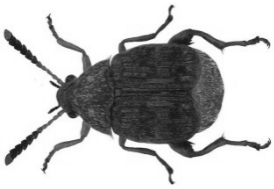
a). Identify the pruning methods illustrated above (2 marks)

b) Give **three** reasons for pruning tea (3 marks)

18. A farmer is advised to apply 60kg N, 20kg P_2O_5, and 30kg K_2O per hectare. Calculate the quantity of urea (46% N), single super phosphate (20% P_2O_5) and muriate of potash (50% K_2O) the farmer should apply per hectare of land. (5 marks)

19. Below are photographs of common pests. Use them to answer the questions that follow.

P 

Q 

a). Identify the pests above (2 marks)

b). Describe the damage caused by pest **P** (1 mark)

c). State **two** ways of controlling the pests (2 marks)

SECTION C (40 marks)

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

20. (a) Describe **seven** cultural methods of soil and water conservation. (7 marks)

(b) Discuss the harvesting of pyrethrum under the following sub headings

i) Harvesting procedure (4 marks)

ii) Precautions during harvesting (3 marks)

c) Describe **three** methods of harvesting agroforestry trees (6 marks)

22. (a) The following information was extracted from Makueni Farm Records for the financial year ending on 30th June 2019. Use it to prepare a profit and loss account for the farm.

- Rent received Sh. 10,000
- Egg sale Sh. 60,000
- Repair of tractor Sh. 30,000
- Opening valuation Sh. 80,000
- Interest on Bank loan Sh. 20,000
- Tax paid Sh. 40,000
- Closing valuation. Sh. 90,000
- Purchase of farm inputs Sh. 90,000
- Debts receivable from farmers' co-op society Ksh 100,000
- Maize sales Sh. 55,000

b) Outline **five** factors which determine the quality of hay (5 marks)

c) Describe **three** mechanical methods of weed control (6 marks)

d) Explain how water is treated to remove solid impurities (3 marks)

23. (a) Explain the factors which may lead to increased demand for maize (8 marks)

(b) Explain how physical agents of weathering may lead to soil formation (8 marks)

(c) Outline **four** advantages of tillage method in weed control (4 marks)

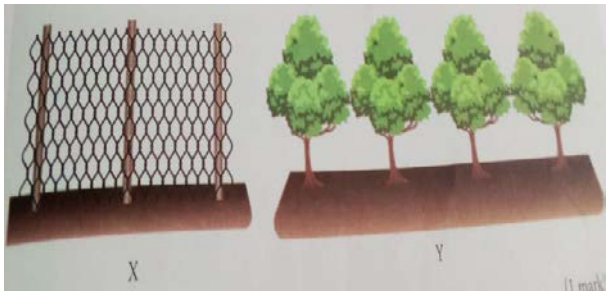
KIENI EAST
443/2
AGRICULTURE
PAPER 2

SECTION A(30 marks):Answer all questions in the spaces provided.

1.
a) State two causes of soft shelled eggs in poultry production. (1 mark)
b) What is the reason for turning eggs regularly during incubation? (1 mark)
2. State the uses of the following tools and equipment.
a) Tinsnips (1/2 mark)
b) Router (1/2 mark)
c) Wire strainer (1/2 mark)
d) Burdizzor (1/2 mark)
3. Outline four characteristics of the Jersey breed that will make a farmer choose to keep them instead of keeping Friesian breed of cattle. (2 marks)
4. State four disadvantages of nomadic pastoralism system of rearing livestock. (2 mark)
5. Give four notifiable diseases affecting cattle. (2 marks)
6. Give two reasons why walls in dairy sheds should be white washed instead of painting with water or oil based paints. (1 mark)
7. State two practices carried out to introduce artificial immunity in livestock. (1 mark)
8. Give four physiological body processes used to indicate the health status of an animal.
9. State four factors that can affect maintenance ration requirements of an animal. (2 marks)
10. (a) Give three reasons for breeding in livestock. ($1\frac{1}{2}$ mark)
(b) Outline three effects of tsetse flies on livestock. ($1\frac{1}{2}$ marks)
11. Give two hormones that influence milk let down. (1 mark)
12. State four maintenance practices of a dairy shed. (2 marks)
13. Differentiate between roughages and concentrates in livestock production. (2 marks)
14. State two functions of the differential in a tractor power transmission system. (1 mark)
15. State three factors that contribute to a high working efficiency of a disc harrow. ($1\frac{1}{2}$ marks)
16. Give three reasons for steaming-up in dairy animals. ($1\frac{1}{2}$ mark)
17. Give four functions of an egg shell. (2 marks)

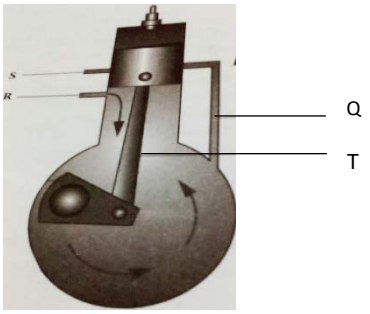
SECTION B (20 MARKS)Answer questions in the spaces provided

18. Study the illustration of fences below and answer the questions that follow.



a) Name the type of fence labeled X and Y respectively. (2 marks)
b) Name the correct tool used in maintenance of fence Y. (1 mark)
c) State two advantages that fence Y have over fence X. (2 marks)

19. Below is a diagram showing the cycle on the working mechanism of an engine. Use it to answer the question that follow.

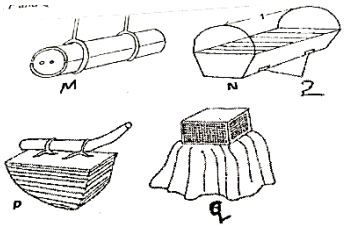


a) With a reason, name the type of engine represented by the diagram shown above. (1 mark)
b) Name the parts labeled Q and S. (1 mark)
c) Using an arrow indicate the direction of motion of the piston. (1 mark)
d) State the advantages of the engine represented by the cycle shown above . (2 marks)

20. The illustration below shows a dairy cow suffering from a certain disease.

a) Identify the disease the cow is suffering from. (1 mark)
b) State two symptoms of the disease named above. (2 marks)
c) State four predisposing factors to the above disease. (2 marks)

21. Diagram M, N, P and Q shows some structures used in livestock production. Use them to answer the questions that follow.



a) Identify the structures labeled M, N, P and Q. (2 marks)
b) State the uses of equipment P. (1 mark)
c) State one advantage of structure N over structure M. (1 mark)
d) State the use of the parts labeled 1 and 2 on structure N. (1 mark)

SECTION C(40 MARKS) Answer any two questions from this section in the spaces provided

22.
a) Outline five qualities of clean milk. (5 marks)
b) Give four reasons for treating timber before using it for construction. (4 marks)
c) State four features of large white breeds of pigs. (2 marks)
d) Explain nine measures used to control livestock diseases. (9 marks)

23.
a) Describe the lifecycle of a three host tick. (6 marks)
b) Describe the feeding practices required in artificial rearing of a dairy calf. (8 marks)
c) Describe the maintenance practices of the water cooling system of a tractor engine. (6marks)

24.
a) Give five functions of water in animals. (5 marks)
b) State and explain five factors considered when culling livestock. (10 marks)
c) Name and give the functions of five tools and equipment used in construction of stone walls.

KIENI EAST
443/1
PAPER 1
TIME: 2 HOURS

Marking Scheme

Section A (30 marks)

1. Four characteristics of extensive farming system (2 marks**)**

– Requires less labour per unit area f and
– Low capital investment per unit area of land
– Low output per unit area of land
– Requires less skills
– Large tracts of land

2. Four minimum tillage practices (2 marks)

– Use of herbicides to control weeds
– Mulching
– Cover-cropping.
– Timely cultivation/timely weeding of previous crop to prevent weed infestation.
– Restricting cultivation to areas where crops have been planted
– Uprooting or slashing of weeds

3. State the meaning of each of the following terms as used in crop production.

a) **Thinning** (1 mark)
Uprooting excess plants from a seed bed to maintain optimum plant population

b) **Pricking out** (1 mark)
Removing extra seedlings from a nursery bed and planting them in a separate nursery bed to reduce overcrowding.

c) **Rogueing** (1 mark)
Uprooting and destroying crops infested with pests or infected with disease to control spread of pests/diseases.

4. Outline four sources of capital in the farm (2 marks)

– Credit facilities
– Personal savings
– Grants from individuals or NGOs
– Inheritance

5. State **four** factors that determine the stage of harvesting crops (2 marks)

– Market demand
– Concentration of the required chemicals
– Purpose/use of the crop
– Weather conditions
– Prevailing market prices and profit margins

6. (a) State **four** roles of organic matter in sandy soils

– Improves soil structure – aeration, drainage absorption and retention.
– Improve water holding capacity of the soil.
– Increases soil fertility e.g. carbon nitrogen etc.
– It provides food and shelter to soil microorganisms.
– Help to keep PH of soil stable (Buffers soil pH).
– Reduces toxicity of plant poisons that have build up in the soil as a result of continuous use of pesticides and fungicides etc.
– Humus gives soil dark appearance making the soil to absorb heat. This moderates soil temperature.

7. Name **one** crop that is propagated by each of the following

a) Stem tuber ….. Irish potatoes (½ mark)

b) Split … Pyrethrum; Napier grass; pasture grasses (½ mark)
c) Slip … pineapples (½ mark)
d) Bulbil … sisal (½ mark)

8. Give **four** factors that can increase seed rate (2 marks)

- Close spacing (reject spacing)
- Planting many seeds per hole (rej number of seeds per hole)
- Planting seeds with low germination percentage (rej germination percentage)
- Planting impure seeds (rej seed purity)
- Planting crops for silage making (reject purpose of the crop)

9. State **two** ways by which soil pH. may affect crop production (1 mark)

- Influences the species of crop grown on a given soil, as different crops do well in different pH ranges
- Determines availability of certain nutrients in the soil

10. Differentiate between monopoly and monopsony (2 marks)

Monopoly; A single seller may dominate the market but many consumers or buyers in the market.
Monopsony: one buyer and many sellers of a specific commodity

11. State **four** disadvantages of communal land tenure system (2 marks)

- No incentive among the users to conserve the land resources.
- Everybody strives to maximize returns from the land without the drive to invest for
- There is a tendency of overstocking and continuous cropping; which leads to soil erosion and loss of land productivity.
- It is difficult to control inbreeding
- Since there is no title deed, it is virtually impossible to secure loans to develop the land

12. Give **four** factors that influence the number of secondary cultivation operations in seedbed preparation (2 marks)

- Size of planting materials
- Slope of the land
- Soil moisture content
- Condition of the land after primary cultivation

13. List **four** methods of farming (2 marks)

- Mixed farming
- Nomadic pastoralism
- Shifting cultivation
- Agroforestry
- Organic farming

14. List **four** benefits of under sowing in pasture management (2 marks)

- Allows for early establishment of pastures
  Facilitates maximum utilization of land

15. State **four** details that may be contained in an invoice (2 marks)

- Date of the transaction.
- Type and quantities of goods delivered.
- Price per unit of the goods.
- Total amount of money involved.
- Serial number of invoice.
- Terms of payment

SECTION B (20 marks)

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

16. The photograph below represents a method of irrigation. Use it to answer the questions that follow.

a) Identify the irrigation method illustrated above **Drip/ trickle irrigation (1 mark)**

b) State **four** advantages of the irrigation method illustrated above

- Minimizes labour requirement especially in changing of water pipes.
- Minimizes possible theft of water pipes.
- Economizes on the use of water.
- Can be practiced on both sloppy and flat land.
- There is no soil erosion.
- No growth of weed between the rows.
- Water under low pressure can be used as long as it can flow along the pipes.
- Controls fungal diseases such as blight because water does not accumulate on the leaves.
- There is no need of constructing dykes, leveling or making (1x4 =4 marks)

17. The following are illustrations of tea pruning methods. Study them carefully and answer the questions that follow.

a) Identify the pegging methods illustrated above

A. Use of rings and pegs

B. Use of individual pegs (1 x2 = 2 marks)

b) Give **three** reasons for pruning tea

- To train the crop to attain the required shape.
- To remove the diseased and unwanted plant parts.
- To facilitate picking. Tea bushes are pruned in order to maintain a low plucking table
- To ease spray penetration. Pruning opens bush making spray penetration effective.
- To control pests and diseases. Pruning destroys the breeding grounds for pests and disease causing organisms. (1x3 =3 marks)

18. A farmer is advised to apply 60kg N, 20kg P_2O_5, and 30kg K_2O per hectare. Calculate the quantity of urea (46% N), single super phosphate (20% P_2O_5) and muriate of potash (50% K_2O) the farmer should apply per hectare of land. (5 marks)

19. Below are photographs of common pests. Use them to answer the questions that follow.

P

Q

a) Identify the pests above (2 marks)

P. Maize weevil **Q**. Bean Bruchid

b) Describe the damage caused pest P (1 mark)

✓ Bores holes on stored grains, feeding on the grains

c) State **two** ways of controlling the pests (2 marks)

- Proper hygiene and sanitation in stores
- Dusting grains with insecticides

SECTION C (40 marks)

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

20. a) Describe **seven** cultural methods of soil and water conservation.

- Cover crop: the more the soil cover the lesser erosion will occur.
- Early planting: establish an early ground cover thus reduces risk of soil erosion
- Crap rotation: improves soil structure where grass should be included.
- Intercropping: increases ground cover
- Afforestation and re- afforestation
- Fallowing: leave land uncultivated for some time
- Grass strips: formed by either leaving narrow strips of land un-ploughed or planting on strips along the contours.
- Contour farming: follow contour ploughing
- Harvesting procedure that leave the crop residues on the field
- Weed control: avoid clean weeding

– Mulching: cover soil with organic and inorganic material
– Strip cropping: grow alternative crops along the contour **(7 x 1 =7 marks)**

b) Discuss the harvesting of pyrethrum under the following sub headings

i) **Harvesting procedure** (4 marks)

– Flowers are ready 3-4 months after planting
– Flowers are picked selectively, those with horizontal petals/ray florets/with 2-3 rows of disc florets open.
– Picking interval is 14-21 days depending on the weather, clone and soil conditions.
– Flowers are put in woven basket for ventilation and to avoid fermentation.
– Avoid compacting flowers in the containers to discourage heating.
– Pick when the weather is dry.
– Twist the base of the flower to pick without the stalk

ii) Precautions during harvesting

– Put flowers in open woven basket.
– Avoid polythene bags.
– Pick dry flowers.
– Avoid compacting flowers in basket. **(3× 1 mark)= 3 marks**

c) Describe **three** methods of harvesting agroforestry trees

i) Pruning

– This is the removal of the branches from the lower part of the tree crown.
– Pruning is done towards the end of the dry season to avoid damage to other crops.
– Branches obtained from pruning are used as fuel or wood fuel.

ii) Lopping

– This is the removal of branches from trees in haphazard manner.
– It is the most common harvesting technique for fodder trees.

iii) Pollarding

– This is the cutting of all the branches and top part of the tree.
– It is usually done to provide fuel wood and fodder.

iv) Coppicing

– This is the cutting of the whole tree about 30cm above the ground.
– This is done to provide fodder, wood fuel and mulching material.

v) Thinning

– This is the cutting down of some trees to avoid overcrowding.
– Thinning is done where trees have been established by direct seedling or planted very closely.

21. (a) **PROFIT AND LOSS ACCOUNT FOR MAKUENI FARM FOR THE YEAR ENDED 30TH JUNE 2019**

EXPENDITURE	SHS	CTS	INCOME	SHS	CTS
Opening valuation	80,000	00	Sales and receipts		
Purchases and expenses			Rent received	10,000	00
Repair of tractor	30,000	00	Egg sale	60,000	00
Interest on bank loan	20,000	00	Debts receivable from co-op	100,000	00
Tax paid	40,000	00	Maize sale	55,000	00
Purchase of farm inputs	90,000	00	Closing valuation	90,000	00
Profit	55,000	00			
Total	315,000	00	Total	315,000	00

(half mark for each correct entry x 12 = 6 marks; include heading; mark totals once)

(b) Outline **five** factors which determine the quality of hay

– Forage species used.
– Stage of harvesting hence stem: leaf ratio.
– Length of the drying period
– Weather condition during the drying process
– Condition of the storage structure **(1x5 =5 marks)**

(c) Describe **three** mechanical methods of weed control (6 marks)

i) Tillage(cultivation)

Desiccates the weeds by exposing the roots to the air.
Buries weeds thus killing them.
Hand tools or tractor implements are used.
Done during dry season to ensure better drying of weeds.
Weeds are destroyed before they produce seeds to break their life cycle.

ii) Slashing (mowing):

Is the mechanical removal of shoots from weeds especially annual weeds when done repeatedly.

iii) Uprooting:

Done where weeds are scattered or where crops are too close to allow mechanical cultivation.

(d) Explain how water is treated to remove solid impurities (3 marks)

22. (a) Explain the factors which may lead to increased demand for maize.

– Increased population which increases the number of consumers
– Increased income of consumers
– Rise in prices of related goods/substitutes such as sorghum
– Changes in tastes and preferences of maize consumers
– Increased advertisement of use of maize products
– Reduced taxation on maize, which leads to reduced price of the commodity
– When there is expected rise in maize price in future
– Future uncertainty, e.g anticipation of shortage of maize in future **(1x8 = 8 marks)**

b) Explain how physical agents of weathering may lead to soil formation.

– **Strong winds** carry materials which hit against each other and break into smaller fragments.
– **Raindrops** hit the ground with some force causing soil erosion.
– **Moving ice** causes rocks to disintegrate.
– High **temperatures** in the arid areas cause the rocks to at different rates. During the night, temperatures drop making the rock to contract. The rock surface contracts faster than the inside. This unequal contraction causes the rocks to disintegrate.
  In places with very **low temperature**, water gets into the cracks, freezes and becomes ice. As water turns into ice, it increases in volume pushing the rock apart hence disintegration.

c) Outline **four** advantages of tillage method in weed control (4 marks)

– Cheap and therefore good for small scale farmers.
– Allow infiltration of water thus minimize soil erosion.
– Earthing up is done during tillage which encourages root growth.
– Crop residue is incorporated in the soil during tillage

KIENI EAST
443/2
PAPER 2

1.

a) State two causes of soft shelled eggs.

– Inadequate calcium
– Newcastle disease ½x2 = 1 mark

b) What is the reason for turning eggs regularly during incubation?

– To avoid the germinal disc sticking on the egg shell leading to a possible lack of hatchability because of embryonic mortality (1x 1= 1 mark.)

2. State the uses of the following tools and equipment.

a) Tin snip
Is used to cut sheets of metal 1/2x 1= 1/2 mark.

b) Router
remove wood to form groove or make groove smooth. 1/2x 1= 1/2 mark.

c) wire strainer
Tightens wire during fencing 1/2x 1= 1/2mark.

d) Burdizzor
Bloodless castration 1/2x 1= 1/2 mark.

3. Outline four qualities of Jersey breed that will make a farmer choose to keep them instead of keeping Friesian.

– They are hardy
– withstand high temperatures
– They have higher butter fat
– They need less food
– They are excellent grazers on fairly poor pastures 1/2x4= 2marks

4. State four disadvantages of nomadic pastoralism system of rearing livestock.

– Only practiced where land is abundant
– Only practiced where land is communally owned
– Land degradation/ soil erosion is high
– No incentives to invest on permanent structures. 1/2x4= 2marks

5. **Give four notifiable diseases affecting cattle**.

– Anthrax
– Rinder pests
– Foot and mouth disease
– Black quarter
– Lumpy skin disease 4 x ½ = 2 marks

6. **Give two reasons why walls of dairy sheds should be white washed instead of painting with water on oil based paints**.

– To avoid poisoning from lead
– Discourage flies from inhabiting/living in the shed
– To avoids tainting milk in the shed during milking 2 x ½ = 1 marks

7. State two practices carried out to develop artificial immunity in livestock.

– Vaccination
– Use of serum 2 x ½ = 1 mark

8. Give four physiological body processes used to indicate the health status of an animal.

– Correct pulse
– proper breathing rate/ventilation rate
– Optimum body temperature
– Normal appetite
– Consistent dung and urine 4 x ½ = 2 marks

9. **State four factors that can affect maintenance requirement of an animal**.
– Body size/ weight of the animal.
– Age of the animal
– Animals activities
– Level of production 4x ½ =2 marks

10.
a) **Give three reasons for breeding in livestock**.
– To overcome production problems
– To introduce new genes which promote better production rates
– To expand the inheritance potential
– To satisfy the consumers taste. Any 3x ½ =1 ½ marks

b) Outline three effects of tsetseflies on livestock.
– They suck blood hence causing anemia
– They transmit diseases to health animals
– They destroy animals hides and skin lowering their quality
– They cause irritation to animals Any 3x ½ =1 ½ marks

11. **Give two hormones that influence milk let down**.
- Oxytocin
- Adrenaline 2x ½ = 1 mark

12. Maintenance practices of a dairy shed.
– Cleaning regularly
– Repairing broken parts
– Panting the wall using white wash
– Replacing worn out parts 4x ½ = 2 marks

13. Differentiate between roughage and a concentrate in livestock production.
– Concentrate is a feed with high protein and energy content and low fibre content while roughage is a feed with high fibre content and low energy content. (Mark as a whole 2 marks)

14. **State two functions of the differential in a tractor power transmission**.
– It enable one of the wheel to move faster than the other when negotiating a corner
– Speed reduction mechanism
– It enable the wheel last longer 2 x ½ = 1 mark

15. State three factors that contribute to a high working efficiency of a disc harrow.
– Serrated discs
– Offsetting the gangs
– Harrowing when the soil has appropriate moisture.
– Lubricate the disc bearings 3x ½ = 1 ½ marks

16. Give three reasons for steaming-up in dairy animals.
– Provides nutrients for foetal growth
– Energy for parturition
– Healthy offspring
– Health dam /mother cow
– High milk yield after parturition. 3x ½ = 1 ½ marks

17. Give four functions of an egg shell.
– It protect inner contents of an egg
– It has pores which allow gaseous exchange in an egg for developing embryo.
– It prevents entry of micro-organisms into an egg.
– It gives the egg its shape. 4x ½ = 2 marks

SECTION B (20 MARKS)

18.
a)
(i) Type of wire fence in diagram X.

– Wooven wire fence 1 mark

(ii) Type of fence illustrated in diagram Y.

– Live fence 1 mark

b) Tools used for maintenance of fence y.

– Pruning shears 1 mark

c) Advantages that fence Y has over fence X.

– When pruned it can be used as animal feeds

– Leaves decompose on the ground as organic matter forming nutrients

– Can be used to mark boundaries

– Adds aesthetic value to the environment 4x ½ = 2 marks

19.

a) The type of engine represented by the cycle shown.

Two stroke cycle engine ½ mark

Reason: presence of ports-inlet, exhaust, transfer ½ mark

b) Name the parts labelled Q and S.

Q – Transfer port ½ mark

S – Exhaust port ½ mark

c) Using an arrow to indicate the direction of the piston.

Arrow should show upward direction, indicating piston is moving up from bottom dead centre.

d) The advantages of the engine represented by the cycle shown above are.

– They are not expensive to buy and maintain

– They are economic - fuel consumption

– They can be used in a wider range of farm land including hilly areas

– They can do small tasks with the farm which would be uneconomical to do using other cycle engine

20.

a) The disease shown by the above diagram is

Mastitis 1x1= 1 mark

b) Symptoms of the disease named above.

– Milk contains pus,

– Blood stained milk

– thick clot in waterly milk.

– Inflamed swollen udder hence animal rejects suckling or milking / kicks due to pain

– Death of the infected quarter

– Salty taste in milk. Any 2 x 1 = 2 marks

c) Predisposing factors to the above disease.

– Age – old animals are likely to be infected as compared to young animals.

– Stage of lactation period – animals are likely to suffer from mastitis at the beginning and at the end of lactation

– Udder attachment – animals with large pendiculus udder and long more susceptible to mastitis infection.

– Incomplete milking- when milk is left in the teat canal, it acts as culture media for the bacteria

– Mechanical injuries – wounds on the teat or udder allow micro-organisms entry in the udder.

– Poor sanitation- increase the multiplication of bacteria causing mastitis

– Poor milking – may result to mechanical injury of the teats and weakening of the sphincle muscles of the teat. Any 4 x ½ = 2 marks

21.

a) Identify the structures named

M- Log hive

N-Kenya top bar hive

P - Smoker

Q - Veil 4 x ½ = 2 marks

b) **Uses of P**

Puffin smoke into the hive 1x1= 1 mark

c) Advantages of N over M.

– Produces high quality honey
– Honey combs can be removed without disturbing the brood
– Easy to construct and repair
– Have bars that can be lifted in order to inspect the comb Any 1x1 = 1 mark

d) Use of the part labelled I and ii on structure N.

– Hanging wire- to suspend the hive 2 x ½ = 1 mark

SECTION C (40 MARKS)

22.

a) **Qualities of clean milk**.

– Free from pathogen
– Free from dust , dirt and hair
– Right taste and smell
– Appropriate flavour /palatable
– Chemical composition should be of acceptable standards 5x1 =5 marks

b) Reasons for treating timber before using it for construction.

– To prevent warping / bending/ twisting
– To prevent rotting / damage by fungi
– To prevent it from pest attack
– To enable timber to achieve its maximum strength. 4x1= 4 marks

c) Features of large white breed of pigs

– Long
– White with blue body spots
– Broad and dished snout
– Upright ears 4 x ½ = 2 marks

d) Measures used to control livestock diseases.

– General farm hygiene / cleanliness of the houses
– Well/ proper disposal of carcass to destroy pathogens
– Isolation of sick animal to prevent spread of diseases.
– Drenching to control internal parasites
– Treating sick animals to prevent spread of diseases
– Vaccinating animals to develop resistance against diseases.
– Control of vectors to prevent transmission of disease pathogens from sick animals to healthy animals
– Proper breeding to control breeding diseases
– Quarantine against outbreak of notifiable diseases to prevent spread of diseases
– Hoof trimming to minimize occurrence of foot rot.
– Proper housing to prevent predisposing causes off diseases
– Slaughtering the affected animals to prevent spread of diseases
– Taking prophylactic measures to control diseases like coccidiosis and also adding antibiotic livestock feed to prevent diseases like scouring young animals. 9x 1= 9 marks

23.

a) **Lifecycle of a three host tick**.

– Egg hatches into larvae
– Larvae climbs on host and feed on the 1st host.
– Larvae drops on the ground and moults into a nymph
– Nymph climbs onto 2nd host and feed on 2nd host.
– Nymph drops onto the ground and moults into an adult.
– Adult feeds and mate on 3rd host

– Mated engorged female drops and lay eggs on the ground. 1 x 7= 7 marks

b) Feeding dairy calf

– Train the calf to feed from a bucket (bucket feeding)
– Ensure the calf suckles the cow within the first eight hours to feed on colostrum
– Feed the calf with colostrum for the first 4 days
– Introduce the feeding of whole milk substitutes after the fourth day
– Feed the calf 2-3 times per day for the first 4 weeks
– Feed the calf on the correct amount of milk upto weaning time
– Provide adequate clean water from the third week
– Feed the calf with warm milk at regular intervals
– Introduce palatable dry feeds (concentrate) and good quality soft grass from the third week
– Provide minerals supplements /salt lick
– change feeding gradually to avoid nutritional disorders 7x1= 7 marks

c) Maintenance of the water cooling system of a tractor.

– Clean water be used in radiator
– All pipe should be fitted tightly
– Check and add water where necessary
– Keep radiator fins free of rubbish and dirt
– Replace worn out parts e.g fan belts hoses.etc
– Tight loose nuts and bolts 6 x1 = 6 marks

24.

a) Give five functions of water in animals

– Water is a component of body cell and blood
– Transport nutrients from one part of the body
– Regulate body temperature
– Forms part of an animal products
– Excretion of metabolic products from the body
– Used in biochemical reactions in the body 5 x1 = 5 marks

b) State and Explain five factors considered when culling livestock.

– Poor health – unhealthy animals are culled to prevent transmission of diseases to offsprings
– Old age- older animals are less strong to parturate, they are also less productive hence should be culled.
– Physical deformities – deformed animals can pass the physical defects like mono-eyed , limping, irregular number of teats or scrotal hernia to offspring, thus should be culled
– Poor mothering ability – animals with poor capability to raise young ones should be culled
– Low production – animals with low productions are culled to avoid loses
– Bad temperament – animals with undesirable behavior such as cannibalism, egg eating and kicking in dairy cattle should be culled.
– Hereditary defects – animals with inheritable bad conditions should be culled to prevent transmitting them to the offspring. 5 x 2 = 10 marks

c) Name and give the functions of five tools used in construction of stone wall.

– Plumb bob- for the checking whether the wall is vertical
– Wood float – for plastering to create a level surface of wall
– Masons trowel- for placing mortal between construction stones
– Spirit level- for checking whether the surface is vertical or horizontal
– Masons square – for checking right angles during construction
– Spade – for scooping and mixing concrete or mortar
– Wheel barrow – for carrying load and also a measure of sand ballast.

KIGUMO CLUSTER
443/1
PAPER 1.
2 hours

SECTION A: (30 MARKS)

1. Differentiate between aquaculture and pomoculture as used in agricultural production.
2. Name two methods of farming. (1 Marks)
3. State two factors that determine the type of farming system to use in a farm. (1 Marks)
4. List four advantages of mixed farming (2Marks)
5. a i) Name one aspects of light that influence crop distribution in Kenya. (1/2Mark)
   ii) State one effect of high temperature on crop production. (1/2Mark)
   b i) State one government policy done in Kenya that has helped improve agricultural production
   ii). Give one important impact of high level of education on agricultural production.
6. State two factors that determine the number of times secondary cultivation is done before planting
7. Give one reason why each of the following tertiary operations is carried out.

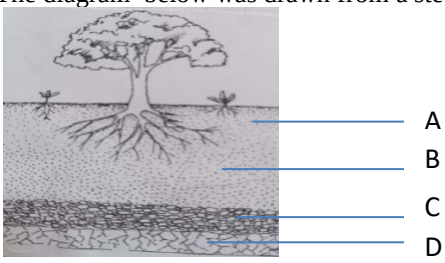
a) Rolling. (½ Mark)

b) Levelling. (½ Mark)

8. Give two reasons for carrying out minimum tillage. (1Mark)
9. State two importance of agroforestry in agricultural production (1Mark)
10. Give two reasons for treating water before use. (1Mark)
11. a) State two factors that affect the quality of farm yard manure. (1Mark)
    b) State the importance of the following in compost manure preparation using the pit method
    i) Ash-
    ii) Top soil-
13. State two functions of potassium in plants. (1Marks)
14. Give two reasons why farmers choose seeds over vegetative materials for planting. (1Marks)
15. State two importance of grafting in crop production. (1Mark)
16. Define the following terms as used in crop production.
    a i) Intercropping. (1/2Mark)
    ii) Mixed cropping. (1/2Mark)
    b) State one pieces of information contained in a livestock health record (1/2 Mark)
18. State two ways in which burning of vegetation cover leads to loss of soil fertility.
19. State two ways in which soil losses its fertility. (1Marks)
20. State two advantages of rotational grazing. (1Marks)
21. State two ways of improving the labour productivity in the farm (1Marks)
22. Differentiate between over-sowing and under-sowing. (2Marks)
23. State two methods of breaking seed dormancy. (1Marks)
24. State two factors that determine the selection for a suitable site for establishing a nursery bed.
25. State two qualities of good silage. (1Marks)
26. State two harmful effects of crop pests. (1Marks)
27. Give three disadvantages of row planting. (1 ½ Marks)

SECTION B: 20 MARKS- ANSWER ALL QUESTIONS IN THIS SECTION

28. a)The diagram below was drawn from a steep side of a construction site.



i) Name the illustration shown above (1/2 Mark)

ii) Name horizons C and D (1 Mark)
iii) State two importance of the illustration above (1 Mark)
iv) Give the term used to describe layer labeled B (1/2 Mark)
v) Soil A was found to have pH 13, state one ways of modifying the pH for tea production.(1 Mark)
vi) Name one methods of analyzing soil obtained from layer labeled A (1 Mark)

29. A farmer is advised to apply 51 Kilograms of a fertilizer NPK 17:17:17.
a) What does NPK stand for in the fertilizer (3 Marks)
b) Calculate the amount of filler material in the fertilizer (2 Marks)

30. The diagram below shows disease that affects a certain crop.

a.) Name the disease. (1 Mark)
b.) State three factors that predispose the crop to the disease (3 Marks)
c) State one way of controlling the disease. (1 Mark)

31. Ukweli farm bought 100 bags of livestock feed at 2500/= per bag, 5 bags of fertilizer at 6000/=each, 1000 liters of tractor fuel at 200/= each,24 kilograms of seed maize at 250 per kilogram.in the same period the farm received 100,000.00 from the sale of milk,200,000/= from maize supply to NCPB,20,000/= from the sale of a bull.
The farm had an opening valuation of 500,000/= and a closing valuation of 700,000/=.
Draw a profit and loss account for Ukweli farm ending 31st of December 2023. (4 Marks)
Determine using values if Ukweli farm made a profit or a loss at the end of the accounting period. (1 Mark)

SECTION C: (40 MARKS) ANSWER ANY TWO QUESTIONS IN THIS SECTION

32a. i) State five roles of agriculture in the economic development of Kenya
ii). State the effects of five different biotic factors that influence agricultural production.
b. Explain five factors that determine the stage in which crops are harvested. (5Marks)
c. Explain five factors that determine seed rate in crop production (5 Marks)

33. a) Discuss cabbage production under the following sub-headings.
i) Varieties. (2Marks)
ii) Ecological requirements. (3 Marks)
iii) Field management practices. (2 Marks)
iv) Harvesting and marketing. (2 Marks)
b. State three factors determining the spacing of annual crops. (3Marks)
c) Explain three factors considered when designing a crop rotation Programme. (3 Marks)
d. Explain five harmful effects of weeds. (5 Marks)

34.a) State four effects of land fragmentation and land sub-division. (4 Marks)
b) Explain four types of risks and uncertainty that farmers face in the production process.
c) Explain six problems facing the marketing of agricultural commodities giving the possible solutions in each case.
d) Explain six biological/cultural methods of soil erosion control. (6Marks)

KIGUMO
443/2
PAPER 2.
2 hours

SECTION A: (30 MARKS)

1. a) Name one set of complementary tools and equipment that are used together in livestock production. (1/2 Mark)
   b) State one reason of maintaining the livestock production tools and equipment (1/2 Mark)
2. State two characteristics of dairy breed of cattle (1 Mark)
3. a) Give the terms used to describe the young one of the following livestock animals.
   b) Name the breeds of livestock animals that with the following characteristics

i) Pig breed,baconer,white in colour, straight snout, long ears drooping over the face, highly prolific with good mothering abiliy,bears broad deep hams (1/2 Mark)

ii) Goat breed,originated from Switzerland,brown in colour with two white stripes running from the eyes to the nose yielding 2.2to 3.0 kgs of milk with butterfat content of 3.3 % (1/2 Mark)

iii) Camel breed originated from central America,bear two humps,skin covered with a thick coat of fur producing upo 12 kgs per shearing,bear two humps,small in size. (1/2 Mark)

iv) Rabbit breed,white in colour,black ears,nose and pawsand tail,very prolific (1/2 Mark)

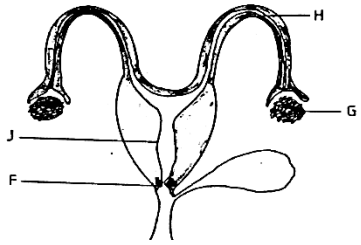
4. State two factors considered when formulating livestock ration. (1 Mark)
5. State two factors that affect the digestibility of a feed in livestock production (1 Mark)
6. State two management practices that necessitate the handling of farm animals (1 Marks)
7. Give two characteristics of an effective acaricide? (1 Mark)
8. Describe two uses of water in the animal's body (1 Mark)
9. a) State two advantages of housing calves singly (1 Mark)
   b) State two features of an ideal calf pen. (1 Mark)
12. State two symptoms for parasite infestation in livestock animals (1 Mark)
13. Differentiate between tactical and strategic treatment. (2 Marks)
14. State two ways in which vaccines are administered to livestock animals (1 Marks)
15. State two non-chemical methods of controlling ticks in cattle (1 Marks)
16. State two characteristics of eggs must suitable for incubation (1 Mark)
17. State two conditions that cause bees to swarm. (1 Marks)
18. State two factors to consider to get optimum animal power (1 Mark)
20. Give two signs of heat observed in female rabbit (1 Marks)
21. State two precautionary measures in handling and caring of vaccines (1 Marks)
22. Give two disadvantages of outcrossing (1 Marks)
23. Give four reasons for feeding Colostrum to calves immediately after birth. (1 Marks)
24. State two reasons for egg candling (1 Mark)
25. State two reasons for soft-shelled eggs in poultry (1 Mark)
26. Give two reasons for docking in sheep rearing. (1 mark)
27. State two maintenance practices carried ou in a spray race. (1 Mark)
28. State two disadvantages of battery cage system of rearing poultry (1 Mark)
29. Give two reasons for seasoning timber (1 Mark)

SECTION B: 20 MARKS- ANSWER ALL QUESTIONS IN THIS SECTION

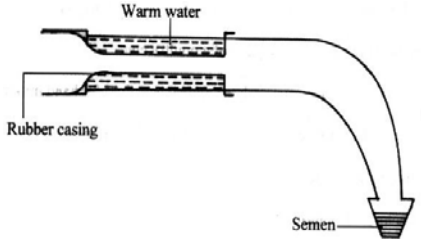
30. Prepare a livestock feed 27% DCP using Sunflower 35%DCP and Maize Germ 11% DCP using the Pearson Square Method

31. a) Diagram A below shows the reproductive system of a livestock animal. Study it carefully and answer the questions that follow.

A



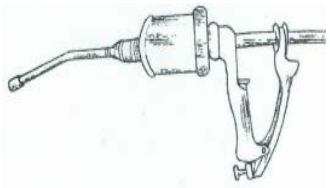
B



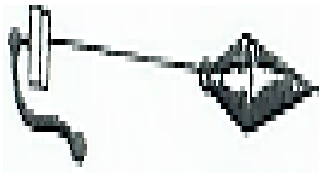
i) Name parts F and J (1 Mark)
ii) State <u>one</u> functions of part G (1 Mark)
b.) Diagram B illustrates an instrument used in cattle breeding.
i) Identify the instrument. (1 mark)
ii) When would it be appropriate to serve a cow after the onset of heat (1 mark)
iii) Apart from the method in which the above instrument is used, name two other methods of serving a cow. (1 marks)

32. Study the diagrams below for various tools and equipment and answer the questions that follow

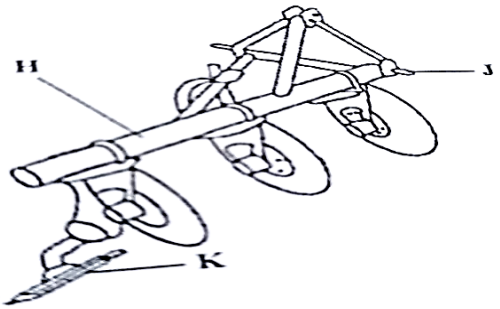
A



B

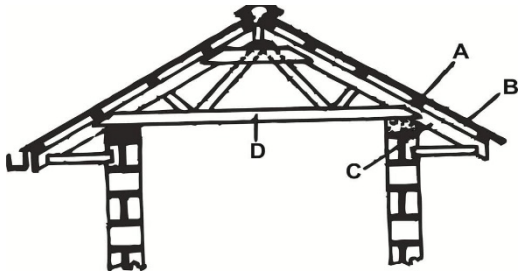


C



a) Name tools A B C and D (2 marks)
b) label parts H and J (1 Mark)
c) state the function of part labelled K (1 Mark)
d) State one operational advantage of implement labeled C over mouldboard plough (1 Mark)

33. The diagram below represents parts of a roof.



i) Identify the parts labeled A and C. (2mark)
ii) State two types of materials that may be used for the part labeled D (2 marks)
iii) Give one disadvantage of using thatch for the part labeled B. (1 mark)

SECTION C: (40 MARKS) ANSWER ANY TWO QUESTIONS IN THIS SECTION

34 a). State five importance of keeping livestock healthy. (5 Marks)
b). State five factors that predispose livestock to diseases. (5 Marks)
c) Give five reasons for embryo transfer (5 Marks)
d) Discuss the parts of a barbed wire fence (5 Marks)

35. a) Describe the procedure of training a calf to take milk from a bucket (5 Marks)
b) Outline the procedure followed when hand-spraying cattle to ensure effective use of acaricide to control ticks (5 Marks)
c. Discuss Foot Rot disease under the following sub headings
i) Causal Organism (1Mark)
ii) Predisposing factors (2 Mark)
iii) Symptoms of attack (2Mark)
iv) ControlMeasures (2Mark)
d). State the factors to consider when siting a farm structure (3 Marks)

36. a) Describe how a four stroke cycle Engine works (12 Marks)
b) Describe the procedure for calf rearing from birth to weaning (8 Marks)

KIGUMO CLUSTER
443/1
PAPER 1.
2 hours
SECTION A: (30 MARKS) ANSWER ALL QUESTIONS IN THIS SECTION

1. Differentiate between aquaculture and pomoculture as used in agricultural production.
Aquaculture is the rearing of fish (and other aquatic animals) in fish ponds while Pomoculture is the growing of fruits.
Mark as a whole (1 X1=1Marks)

2. Name two methods of farming. (1 Marks)
- Mixed farming.
- Nomadic pastoralism.
- Shifting cultivation.
- Organic farming.
- Agroforestry.

3. State two factors that determine the type of farming system to use in a farm. (1 Marks)
- Size of the farm(large size allows plantation farming)
- Government policy
- Aims and objectives of the farmer
- Farmers knowledge and skills concerning the enterprise
- Cultural and religious factors
- Environmental factors
- Type of land tenure system
- Availability of resources like capital

4. List four advantages of mixed farming (2Marks)
- Farmers get income throughout the year
- Farmers have many more sources of income
- Animals can productively be used as a source of power
- It ensures proper utilisation of labour throughout the year
- There is mutual benefit between crops and livestock because crops benefit from animals while livestock benefit from crop residues after harvesting of food
- It reduces possible total losses in case of failure of only one enterprise
- It reduces the risk in case of price fluctuations of produce in one enterprise

5. a i)Name one aspects of light that influence crop distribution in Kenya.
- Light wavelength
- Light intensity
- Light duration

ii) State one effect of high temperature on crop production.
- Increases evaporation/evapotranspiration leading to wilting of crops.
- Increase rate of growth or hastens maturity of a crop like beans, melons.
- Improves the quality of some crops such as pineapples and oranges.
- Increases incidence of disease infection /pest attack in crops like leaf rust in coffee /aphids in vegetables. (1/2X1=1/2Marks)

b i) State one government policy done in Kenya that has helped improve agricultural production. Heavy taxation of imports in order to protect local industries. -This makes importation more expensive and discourage sale of products similar to those produced locally.
- Subsidizing the growing of locally produced commodities. This makes production cheap and affordable to most farmers. E.g. reducing tax on inputs to make them cheaper to buy and use.
- Quality control. This ensures production of high quality goods
- Conservation of natural resources. To make them sustain agriculture.
- Stepping up control of diseases and parasites that affect crops and livestock.

ii). Give one important impact of high level of education on agricultural production. (1/2 Mark)

- Proper method and time of doing things such as planting at the proper time and spacing.
- Use of the right type and amount of inputs.
- Applying the inputs at the right place. E.g. foliar fertilizers on the leaves.
- Making right decisions based on proper observation. It helps for example, in observing signs of disease and applying the right treatment or fertilizers.

6. State two factors that determine the number of times secondary cultivation is done before planting

- Size of the planting materials. Big seeds require a fairly rough seedbed, while small ones require a fine one.
- Slope of the land. On hilly land, very fine seedbed could encourage soil erosion thus reduce the number of secondary operations.
- The moisture content of the soil. In dry soils, fewer operations are preferred so as to conserve the available moisture.
- Condition of the land after primary cultivation. Where there is plenty of trash, more secondary operations are carried out to incorporate most of the trash in the soil. (1/2X2= 1Mark)

7. Give one reason why each of the following tertiary operations is carried out.

c) Rolling. (½ Mark)

- Prevent small seeds from being carried away by wind.
- Prevents soil erosion by compacting loose soil.
- Increases seed-soil contact. (1/2X1=1/2 Mark)

d) Levelling. (½ Mark)

- Promote easy germination of small seeded crops.
- Facilitates uniform germination of seeds. (1/2X1=1/2 Mark)

8. Give two reasons for carrying out minimum tillage. (1Mark)

- To reduce the cost of cultivation. This is by reducing the number of operations.
- To control soil erosion. Mulching and cover cropping greatly reduce chances of soil erosion.
- To maintain soil structure. Continuous cultivation destroys soil structure hence it is avoided.
- To conserve moisture. Continuous cultivation exposes the soil to the heat of the sun thus enhancing evaporation of available moisture.
- To prevent exposure of humus to adverse conditions such as the sun's heat that cause volatilization of nitrogen.

9. State two importance of agroforestry in agricultural production

- Remedy to deforestation /Promotes afforestation and reduce environmental degradation.
- Source of wood fuel-Agroforestry provides sustainable source of fuel wood helping to ease wood shortages
- Source of income from sale of products from trees/shrubs e.g. fruits, poles, timber and fodder can be sold. They also help in saving cash that would have been used to acquire them.
- Reducing soil erosion -Environmental benefits. Trees protect soil from strong wind, rain and sun reducing soil erosion. Litter from leaf fall adds organic matter to the soil. On large scale, agroforestry improves water catchment.
- Labour saving. Time spent looking/fetching firewood could be employed on other productive work in the farm.
- Beauty value/Aesthetic value. Trees/shrubs help to beautify the environment and make the place more pleasant to live in.

10. Give two reasons for treating water before use.

- To remove excess chemicals such as fluoride.
- To kill disease causing microorganisms.
- To remove solid sediments/make water clear.
- To remove bad taste and smell.

11. a)State two factors that affect the quality of farm yard manure. (1Mark)

- The type of animal used. Dung from fattening animals has higher level of nutrients than from that of

dairy animals

- Type of food eaten. Feedstuffs that are highly nutritious results in manure with a higher level of nutrients.
- Type of litter used. Wood shavings and sawdust are slow to decompose and contain very little nutrients. Napier grass provides both nitrogen and phosphorus but has low urine absorption capacity. Litter used should have a high urine absorption capacity.
- Method of storage. Farm yard manure must be stored well in a leak proof and concrete floor to prevent loss of nutrients though leaching and vaporization.
- Age of farm yard manure. Well rotten manure is rich in nutrients and it is easy to handle and mix with the soil.

b) State the importance of the following in compost manure preparation using the pit method

i) Ash- to add mineral nutrients (1/2X1=1/2 Mark)

ii) Top soil- to introduce microorganisms/decomposers (1/2X1=1/2 Mark)

13. State two functions of potassium in plants.

- Plays an important role in carbohydrates formation and translocation.
- Necessary for neutralization of organic acids in plants.
- Assists in the uptake of nitrates and has a balancing effect on P and N uptake.
- Component of chlorophyll molecule.
- Increases strength of straws in cereals
- Increases disease resistance in crops (1/2 X2=1Mark)

14. Give two reasons why farmers choose seeds over vegetative materials for planting.

- Seeds are easy to treat against soil borne pests and diseases.
- Seeds are not bulky and thus are easy to store.
- Seeds are easy to handle during planting making operation faster.
- It's easy to use machines like planters and drillers when using seeds.
- It's possible to apply fertilizer and manure together with seeds during planting.
- Possible to develop new crop varieties due to cross pollination. (1/2 X2=1Mark)

15. State two importance of grafting in crop production. (1Mark)

- Plants with desirable root characteristics e.g. disease resistance, vigorous root system but with undesirable products may be utilized to produce desirable products. E.g. lemon-orange graft.
- Facilitates the changing of the top of the tree from undesirable to desirable.
- Makes it possible to grow more than one type of fruit or flower on the same plant.
- Helps to propagate clones that cannot be propagated in any other way.
- Grafting helps to repair broken tress.
- Helps to shorten the maturity age. Grafted mangoes take 3 1/2 years to mature while ungrafted mangoes takes up to 7 years to mature.

16. Define the following terms as used in crop production.

a i) Intercropping. (1/2Mark)

Growing two or more types of crops together on the same piece of land at the same time.

ii) Mixed cropping. (1/2Mark)

Growing two or more types of crops in different sections in the same piece of land at the same time.

b) State <u>one</u> pieces of information contained in a livestock health record

i. Date of treatment

- Type of disease
- Animal affected
- Method of treatment
- Symptoms of disease
- Cost of treatment

18. State <u>two</u> ways in which burning of vegetation cover leads to loss of soil fertility.

- When vegetation is burnt, organic matter is destroyed leading to the destruction of soil structure.
- Accumulation of ash formed after burning cause nutrient imbalance which may lead to unavailability

of some nutrients.

- Micro-organisms are also destroyed thereby interfering with microbial activities such as nitrogen fixation and decomposition of organic matter.
- The soil is also left exposed to the agents of soil erosion.

19. State two ways in which soil losses its fertility. (1Marks)

- Leaching-of dissolved mineral salts below the root region.
- Soil erosion-removes top fertile soil.
- Continuous cropping removes large amounts of nutrients from the soil resulting to loss of fertility.
- Change in soil pH affect the activity of soil micro-organisms / availability of soil nutrients.
- Burning of vegetation cover destroys organic matter/ destroys soil structure/Accumulates ash causing nutrient imbalance which may lead to unavailability of some nutrients.
- Accumulation of salts when the water table rises/soil is water-logged causes poor plant water absorption/water deficiency.

20. State two advantages of rotational grazing. (1Marks)

- Livestock make maximum use of pastures.
- Reduces the build-up of parasites and diseases/disease pathogens.
- Animal waste is distributed evenly in all fields or paddocks.
- Pasture area is given time to regrow before it is grazed on again.
- Excess pasture can be harvested for conservation.
- It is possible to apply fertilizer /carry out reseeding/carry out weeding in portions of the pastures which are not being grazed.

21. State two ways of improving the labour productivity in the farm (1Marks)

- Training of labour Force
- Giving incentives to employees e. g. proper housing, transport, proper remuneration of a worker
- Supervision of labour
- Mechanizing farm operations
- Assign specific tasks according to skills (1/2 X2=1Mark)

22. Differentiate between over-sowing and under-sowing.
Over sowing is the introduction of a pasture legume in an existing grass pasture while under sowing is the establishment of a pasture under a cover crop usually maize.

23. State two methods of breaking seed dormancy. (1Marks)

- Mechanical method/Scarification /nicking to make the seed coat permeable to water.
- Heat treatment-hot water treatment by soaking in hot water 80^0C for 3-5 min / lightly burning the seeds to melt off tannin.
- Chemical treatment/ dipping the seeds in chemicals e.g. Concentrated sulphuric acid to wears off the seed coat.
- Soaking in water until (for 24-48 hours) it swells to soften/break the seed coat.

24. State two factors that determine the selection for a suitable site for establishing a nursery bed.

- Near to the water source. Site near a reliable water source for ease of watering.
- Type of soil. Site in a well- drained and fertile soil preferably sandy loam.
- Topography. Site on a gentle sloping land to prevent flooding and soil erosion through run-off.
- Previous cropping. Site where the same crop family has not be planted for the last three years to prevent attack by pest and diseases.
- Security. Site in a well –protected area from theft and animals.to prevent theft and destruction by animals and birds.
- Well sheltered place. Where there are strong winds establish windbreaks to reduce excessive evapotranspiration and destruction of seedlings by strong winds.

25. State two qualities of good silage. (1Marks)

- Be from high quality forage cut at the proper stage of growth.
- Have a pH of 4.2 or below.

- Have 5-9% lactic acid.
- Be free of moulds and bad odours such as ammonia and butyric acid.
- Be greenish to yellow, not brown or black.
- Have a fine texture with no sliminess. (1/2 X2=1Mar

26. State two harmful effects of crop pests. (1Marks)

- Pests like squirrels and mice unearth planted seeds resulting in low plant population.
- Some e.g. nematode, termites and moles damage crop roots causing wilting and death of plants.
- Pests destroy crop leaves lowering the photosynthetic area resulting in reduced yields.
- Sucking pest deprive the plants of its food by sucking plant sap resulting in retarded growth.
- Some pests attack fruits, berries and flowers, thus lowering their quality and quantity.
- Some pests destroy the embryo of seeds, thus lowering their germination potential.
- Some transmit crop diseases e.g. aphids and mealy bugs transmit viral diseases
- Some pests cause wounds that acts as route of secondary infection.
- Some pests e.g. stalk borers, eat the growing points causing retarded growth.
- Pests damage lowers quantity of produce.
- Pests lower quality reducing the marketability of crop produce by e.g. weevils

27. Give three disadvantages of row planting.

- Requires some skills in measuring distance between and within rows.
- Time and labour consuming thus more expensive.
- Does not provide ample foliage cover thus erosion is likely to occur.

SECTION B: 20 MARKS- ANSWER ALL QUESTIONS IN THIS SECTION

28. a)The diagram below was drawn from a steep side of a construction site.

vi) Name the illustration shown above
Soil profile

vii) Name horizons C and D
C- Weathered rock
D- Parent rock

viii) State two importance of the illustration above

- Enable a farmer to choose the appropriate crop to grow/deep or shallow rooted crops
- Helps a farmer determine the depth of ploughing
- Helps a farmer to determine the kind of foundations for farm structures.

ix) Give the term used to describe layer labeled B
Layer of accumulation.

x) Soil A was found to have pH 13, state one ways of modifying the pH for tea production.

- Application of acidic fertilizers to lower the pH.
- Application of sulphur.

vi) Name one methods of analyzing soil obtained from layer labeled A (1 Mark)
i) Mechanical analysis
ii) Chemical analysis

29. A farmer is advised to apply 51 Kilograms of a fertilizer NPK 17:17:17.

a) What does NPK stand for in the fertilizer (3 Marks)
N-Nitrogen
P-Phosphorous Pentoxide
K-Potassium Oxide

b) Calculate the amount of filler material in the fertilizer (2 Marks)
100Kg-(17+17+17) Kg (1X1=1 Mark)
(100-51)=49Kilograms (1X1=1 Mark)

30. The diagram below shows disease that affects a certain crop.

a.) Name the disease. (1 Mark)
Blossom end-rot (1X1=1Mark)

b.) State three factors that predispose the crop to the disease (3 Marks)

- Irregular watering
- Too much nitrogenous fertilizer at early stage of growth
- Calcium deficiency

c) State one way of controlling the disease. (1 Mark)

i) Regular watering

ii) appropriate/adequate amount of nitrogenous fertilizer at early stage of growth

iii) supply adequate amount of Calcium .

31. Ukweli farm bought 100 bags of livestock feed at 2500/= per bag, 5 bags of fertilizer at 6000/=each , 1000 liters of tractor fuel at 200/= each,24 kilograms of seed maize at 250 per kilogram.in the same period the farm received 100,000.00 from the sale of milk,200,000/= from maize supply to NCPB,20,000/= from the sale of a bull.
The farm had an opening valuation of 500,000/= and a closing valuation of 700,000/=.
Draw a profit and loss account for Ukweli farm ending 31st of December 2023. (4 Marks)

PROFIT AND LOSS ACCOUNT FOR UKWELI FARM ENDING 31ST OF DECEMBER 2023

PURCHASES AND EXPENSES	KSHS	CTS	SALES AND INCOME	KSHS	CTS
OPENING VALUATION	500,000	00	Debt receivable (milk)	100,000	00
Livestock feed	250,000	00	Maize sales	200,000	00
fertilizer	30,000	00	Sale of bull	20,000	00
fuel	200,000	00			
Maize seeds	6,000	00	CLOSING VALUATION	700,000	00
TOTAL	986,000	00			
NET PROFIT	34,000	00			
	1,020,000	00		1,020,000	00

Guidance in marking table
Labeling correct column (1/2 Mark each=1 Mark)
Entries in each column (1 Mark each=2 Marks)
Net profit (correct entry after computation 1 Mark))

Determine using values if Ukweli farm made a profit or a loss at the end of the accounting period.
(SALES AND INCOME)-(PURCHASES AND EXPENSES)=NET PROFIT
1,020,000-986,000=34000/=
Ukweli farm made a profit(of 34,000.00) (1 Mark)

SECTION C: (40 MARKS) ANSWER ANY TWO QUESTIONS IN THIS SECTION

32a. i) State five roles of agriculture in the economic development of Kenya

- Agriculture provides food that feed the communities giving them strength and health saving money and making the nation more productive
- Provides employment directly as farm managers or farm hands or transportation of agricultural produce
- Earns foreign exchange. Kenya exports coffee see flowers their products to foreign countries that are foreign exchange the money is used to buy agricultural inputs such as machinery tools petroleum products motor vehicles used in agriculture
- Source of income also called revenue or capital agriculture provides produce that is sold to earn an income for the farmer that is used to purchase farm inputs and fertilizers pesticides and tools for the government taxes farmers income to obtain revenue that is used to finance infrastructure such as roads
- Source of raw materials for industries most agricultural produce are processed before use hides and skins in the leather making industry maize grain in the milling industry milk in the dairy industry stimulating industrial development
- Provide market for industrial goods farmers by farm inputs like fertilizers pesticides and tools from manufacturing industries promoting industrialisation
- Agriculture promotes international relations by creating jobs and enlarging foreign market

ii). State the effects of five different biotic factors that influence agricultural production. (5 marks)

- Pests Lowers the quality -Some injure the plant parts which they feed on and as a result expose the plant to secondary infection. They may also lead to rotting of produce. / Pests Lowers the quantity of agricultural produce. They transmit crop diseases. Pests with sucking mouthparts feed on sap and in the process they transmit crop diseases especially viral diseases.
- Parasites suck blood from the animals and irritate them by biting on their skin.
- Decomposers act on plant and animal remains. They lead to decomposition thus adding organic matter to the soil.
- Predators that feed on pests are beneficial to farmers as they reduce pest populations.
- Pathogens transmit diseases. They reduce both the quality and quantity of agricultural products.
- Pollinators. They lead to cross pollination which helps in the production of new and improved varieties of crops.
- Nitrogen fixing bacteria. Convert nitrogen from air into nitrates. Their presences in soil make soil more fertile when leguminous crops are grow (1 X5=5 Marks)

b. Explain five factors that determine the stage in which crops are harvested. (5Marks)

- Purpose of the crop/intended use of the crop. Crop meant for grain production is harvested when grains mature while that meant for silage is harvested at silky stage.
- Market demand. Some crops like maize can be harvested when green or when dry depending on market demand of either. The farmer sells when he will get the highest returns.
- Concentration of the required chemical. The part harvested should have the required chemical concentration in such crops like tea and coffee. This influences quality of the produce.
- Weather conditions. Harvesting should be done during the dry season. To avoid rotting of the produce in the field.
- Prevailing market price and profit margins.in some crops harvesting can be delayed to await better prices at a later date. (1 X5=5 Marks)

c. Explain five factors that determine seed rate in crop production (5 Marks)

- Seed purity. Low seed rate is used for pure seeds while a high seed rate is used for impure seeds. This is because pure seeds have a high germination percentage.
- Germination percentage. Seeds of lower germination percentage require higher seed rate and vice versa. This means that seeds of high germination potential will all germinate hence no need of using more seeds per hole to cater for those that will not germinate.
- Spacing. At closer spacing more seeds are used as compared to wider spacing. The closer the spacing the higher the number of seeds accommodated in a given area hence increasing amount of seeds planted.
- Number of seeds per hole. The more the number of seeds planted per hole, the higher the seed rate used. More seeds per hole increases the number of seeds used per unit area
- Purpose of the crop. Crop for silage production is spaced closely than that for grain production hence a higher seed rate. This is because at a closer spacing more seeds can be accommodated in a unit area hence a higher seed rate.

33. a) Discuss cabbage production under the following sub-headings.

i) Varieties. (2Marks)

Early maturing varieties. They include; Sugar loaf, Mukuki, Golden acres, Gloria hybrid and Copenhagen market.

Late maturing varieties. They include; Early drum-head, Savoy cabbage, Prize drum- head, Perfection and Surc-head.

ii) Ecological requirements. (3 Marks)

Altitude. 1800-2900M above the sea level. Small varieties do well at altitude as low as 900M.

Rainfall. 750mm for small headed varieties and 2000mm for large headed varieties.

Soils. Requires deep well drained and fertile soils that are slightly acidic. PH of 6.5.

iii) Field management practices. (2 Marks)

- Top dressing. Top dress at 20-25 cm high with one teaspoonful of SA or CAN and repeat 3-4 weeks after the first top dressing.

- Weeding. The field should be kept weed free and hand weeding is done. Do not break the leaves during weeding as it interferes with head formation.

iv) Harvesting and marketing. (2 Marks)

- Takes 3-4 months after transplanting.
- Heads are cut when solid and compact.
- Delay harvesting after maturing makes the heads to crack and start rotting especially during the rainy season except for Gloria hybrid.

b. State three factors determining the spacing of annual crops. (3Marks)

- Type of machinery to be used. Wider spacing is used where machines are to be used in other cultural operations.
- Soil fertility. In a fertile soil closer spacing is used and vice versa.
- Size of the plant. Tall crop varieties require a wider spacing and vice versa.
- Moisture availability. Areas with high rainfall require a closer spacing as compared to areas with low rainfall.
- Use of the crop. Crops grown for forage/silage is planted at closer spacing than one grown for grain production.
- Pest and disease control. Wider spacing is used to control pest and disease spread.
- Growth habit of the crop. Tillering and spreading crop varieties require a wider spacing than erect type.

c.) Explain three factors considered when designing a crop rotation Programme. (3 Marks)

- Crop root depth. Alternate deep rooted crops with shallow rooted crops.to ensure utilization of nutrients from all regions of the soil.
- Crop nutrient requirements. Heavy/gross feeders should come first in a newly opened land that is relatively fertile this is because they require a lot of nutrients.
- Weed control. Crops associated with certain weeds should be alternated with those that are not. Some weeds are specific to a certain family and alternating it with another family effectively controls it.
- Pests and disease control. Crops of the same families should not follow each other in a rotation Programme. This is because they are attacked by the same pests and disease.
- Soil fertility. Leguminous crops should be included in the programme.to fix nitrates the soil.
- Soil structure. Include a grass ley at the end of the Programme to improve soil structure by binding the loose soil together.

d. Explain five harmful effects of weeds. (5 Marks)

- Weeds compete with crops for nutrients, space, light and soil moisture thus reduces crop yield.
- Some weeds e.g. Striga are parasitic to cultivated crops such as maize.
- Some weeds lowers quality of agricultural produce e.g. Mexican marigold gives undesirable flavors in milk. Black jack, forget-me-not, get attached to sheep wool thus lowering its quality.
- Some weeds are poisonous to man and livestock. E.g. thorn apple. Sodom apple. Flower of the hour (Hibiscus trionum) and Abutilion (Abutilion maurianum). Are alternate host to cotton stainers.
- Some weeds acts as alternate host for insect pest and diseases. E.g. wild oats is alternate host rust.
- Some weeds have allelopathic that is the produce poisonous substances that suppress growth of crops.
- Some weeds block irrigation channels making it difficult for water to flow freely in irrigated land.
- Weeds lowers the quality of pastures e.g. tick berry suppress the undergrowth.
- Others reduce the palatability of herbage e.g. Nut grass.
- Some weeds are difficult to handle and control because they irritate workers reducing the efficiency in which they are controlled. E.g. double thorn and stinging nettle.
- Aquatic weeds e.g.Salvinia (Salvinia auriculata) in Lake Naivasha and water hyacinth (Eichhornia crassipes) in Lake Victoria, affect fishing by blocking and cut off oxygen supply to aquatic animals.

34.a) State four effects of land fragmentation and land sub-division. (4 Marks)

- Time is wasted while travelling from one holding to another or from the farmstead to the various fragment.
- Proper and effective control of weeds and pests become difficult since the fragments are surrounded by other farmer's holdings. The other holdings may have been neglected so they become sources of infestation.
- Difficulties of following a sound farm plan arising from the distance between
- fragments and the farmer's home.
- Difficulties in the supervision of the scattered plots.
- Control of livestock parasites and diseases is difficult as they are transmitted as animals move from one filed to another.
- Difficulties in carrying out various soil conservation measures without the co- operation and concerted efforts from all the farmers. Such soil conservation devices may also take unduly large portions of the fragments.
- The size and shape of such holdings may be such that it is virtually impossible for the farmer to restrict grazing in one holding only. It could turn out to be a kind of communal grazing.
- Difficulties of offering extension advice. Thus it becomes difficult to help the farmer to increase farm productivity.

b) Explain four types of risks and uncertainty that farmers face in the production process.

- Fluctuation of commodity price. The farmer may not be able to predict the future market prices of commodities.
- Physical yield uncertainty. The farmer does not know how much to expect because of the various factors that may affect yields.
- Ownership uncertainty. The farmer may lose part or whole of the produce through theft, change of government policy or association with other businesses.
- Outbreak of pests and diseases. The farmer's outcome may be affected by pests and diseases reducing he expected yields.
- Sickness and injury uncertainty. The farmer or the employees may lose the ability to work due to sickness or injury hence affecting the labour available especially in labour peak periods.
- New production technique uncertainty. The farmer is may not be certain as to whether a new technology may be as effective as the previous one.
- Obsolescence. Occurs where a farmer invest in a machinery which may become outdated within a short time.
- Natural catastrophies. The occurrence of floods, drought storms, earthquake may not be predictable yet when they occur the leads to massive destruction of crops buildings and death of livestock.

c.) Explain six problems facing the marketing of agricultural commodities giving the possible solutions in each case. (6Marks)

- Perishability. Most are perishable and deteriorate in quality rapidly. Products must be stored under refrigeration, sold immediately after production. Processing into other forms e.g. canning of fruits increases their keeping quality.
- Seasonality. Production of agricultural commodities is seasonal and available in plenty at harvest periods. This affects market prices and creates shortage problems. Supply is inelastic during supply period and it is difficult to determine prices. Solution. Storing surplus produce to be released during period of scarcity.
- Bulkiness. Most are bulky, weigh heavily, occupy a large space and have low value per unit weight. They require large storage spaces. Transportation increases their prices beyond reach of ordinary producers. Solution. Processing of the produce.
- Storage. Due to seasonality, there is need to store the produce. This calls for construction of storage facilities that are expensive thus increasing cost of marketing. Solution.
- Farmers should pull resources together to purchase the storage facilities.
- Poor transport system. Rural areas with the bulk of agricultural production have poor roads and inadequate means of transport. Farmers thus cannot easily take the produce to the market on time

and the produce being perishable get spoilt in farms.

- Change in market demand. Plans based on today's demand may yield products years/months later. There is a relatively long time lag between the decision to produce and actual availability of the product. In this time consumers tastes and preference may change affecting demand and price. Solution. Contracting.
- Limited elasticity of demand. The bulk of agricultural produce is food produce which has inelastic demand. Thus an increase in food supplied does not necessarily increase the quantity bought. The products cannot be converted to serve another purpose. Thus the only alternative is for farmers to dispose the excess supply at a throw away price.
- Lack of market information. Some farmers lack adequate market information before selling their produce due to low state of knowledge. This leads to: Producing goods not in conformity with market demand, farmers may be exploited by unscrupulous middlemen who buy the produce at low prices.
- Change of supply. There is overproduction or underproduction of agricultural goods leading to change in supply in the market. Supply thus is relatively inelastic resulting to fluctuation of market prices. Solutions. Use of modern technology to maintain production. Storage of surplus produce to regulate supply.
- Efficiency in marketing.

d) Explain six biological/cultural methods of soil erosion control. (6Marks)

- Grass strips/filter strips. Uncultivated strips 1-2 meters wide along the contour between cultivated strips (30M).The strips are composed of grass and they gradually form terraces. Reduce speed of run off and filter out soil.
- Cover cropping. A crops that spread over the surface of the soil is established to provide a cover. Decreases raindrop impact and prevent soil from being baked by the sun thus preserving soil moisture and volatile soil nutrients.
- Contour farming. Tillage and planting are done across the hill to create ridges of earth which hold up water and prevent rill erosion by reducing water run- off. It checks erosion on gentle slopes.
- Mulching. Inorganic or organic materials are spread on the ground near the plant base to; Prevents splash erosion, reduces speed of run-off and thus increases water infiltration.
- Strip cropping.
- Crops with little soil cover are grown in alternate strips with those having good ground cover. The different strips control movement of soil particles hence controlling soil erosion.
- Grassed/vegetated waterways. A continuous depression man-made or natural through which water flows. Grass/vegetation is planted in the depressions to slow the speed of water and traps eroded soil preventing further erosion.

KIGUMO
443/2
PAPER 2.
2 hours
SECTION A: (30 MARKS)

1. a) Name one set of complementary tools and equipment that are used together in livestock production.
- Trocar and Canula
- Bull ring and lead stick
- Hypodermic needle and syringe
- Elastrator and rubber ring (1/2 X1=1/2Mark)

b) State one reason of maintaining the livestock production tools and equipment (1/2 Mark)
- Increase tool efficiency
- Prevent injuries
- Reduce replacement costs
- Avoid damage to the tool
- Increase durability

2. State two characteristics of dairy breed of cattle (1 Mark)
- Straight top line
- Prominent milk vein
- Large swell develop head quarter
- Large stomach capacity
- Triangular in shape/wedge shaped
- Large well developed udder and teats
- Have large stomach
- Have well set hindquarters
- Their lean bodies carry little flesh
- They are docile /have mild temperament (1/2 X2=1Mark)

3. a) Give the terms used to describe the young one of the following livestock animals (1 Mark)
Rabbit -Kindling (1/2X1=1/2 Mark)
Fish -Fingerling (1/2X1=1/2 Mark)

b) Name the breeds of livestock animals that with the following characteristics

i) Pig breed,baconer,white in colour, straight snout, long ears drooping over the face,highly prolific with good mothering abiliy,bears broad deep hams (1/2 Mark)
Landrace (1/2X1=1/2 Mark)

ii) Goat breed,originated from Switzerland,brown in colour with two white stripes running from the eyes to the nose yielding 2.2to 3.0 kgs of milk with butterfat content of 3.3 % (1/2 Mark)
Toggenburg (1/2X1=1/2 Mark)

iii) Camel breed originated from central America,bear two humps,skin covered with a thick coat of fur producing upo 12 kgs per shearing,bear two humps,small in size. (1/2 Mark)
Bactarian (1/2X1=1/2 Mark)

iv) Rabbit breed,white in colour,black ears,nose and pawsand tail,very prolific (1/2 Mark)
California white (1/2X1=1/2 Mark)

4. State two factors considered when formulating livestock ration. (1 Mark)
- Body weight/size
- Available feeds
- Cost of feeds
- Nutrient composition of feeds available.
- Ingredients required in the ratio.
- Animals level of production.
- Age / stage of growth.
- Type of production. (1/2 X2=1Marks)

5. State two factors that affect the digestibility of a feed in livestock production (1 Mark)

- The quantity of feed already present in the digestive system of the animal
- Chemical composition of the feed.
- The ration of energy to protein in the feed
- The form in which the feed is offered to the animal e.g. crushed maize is more digestible than whole maize.
- The species of the animal- e.g. sheep is able to digest grass better than pigs
- Moisture content of the food (1/2 X2=1Mark)

6. State two management practices that necessitate the handling of farm animals (1 Marks)

- During treatment
- When spraying or hand dressing
- When milking
- When performing some management practices e.g. dehorning
- When inspecting animals for any signs of a disease (1/2 X2=1Mark)

7. Give two characteristics of an effective acaricide? (1 Mark)

- Able to kill ticks
- Harmless to both human beings and livestock
- stable – remains effective even after contamination by dung, mud or hair (1/2 X2=1Mark)

8. Describe two uses of water in the animal's body (1 Mark)

- Part of body fluids e.g. blood
- Medium of excretion e.g. urine
- Fills the body cells to make them turgid and gives them shapes.
- Cools the animals body
- Form part of animals products e.g. milk.
- Medium of biochemical reactions in the cell cytoplasm.
- Softens food for digestion to take place.
- Transport digested food substances i.e. glucose, amino acids fatty acids/glycerol to their absorption sites into the blood stream
- Dilutes other body chemicals to optimum concentrations e.g. hydrochloric acid in the stomach.
- Lubricant to expel wastes from the animals (1/2 X2=1Mark)

9. a) State two advantages of housing calves singly (1 Mark)

- Controls parasites
- Prevents formation of hair balls in the rumen
- Controls diseases (1/2 X2=1Mark)

b) State two features of an ideal calf pen. (1 Mark)

- Well ventilated
- Well lit
- Easy to clean
- Free from draught
- Spacious
- Leak-proof
- Proper drainage

12. State two symptoms for parasite infestation in livestock animals (1 Mark)

- Presence of sores/wounds on the skin
- Irritation/scratching by the animal
- Loss of hair/alopecia
- Anaemia
- Presence of various development stages of the parasite on the animal

13. Differentiate between tactical and strategic treatment. 2 Marks)

Strategic treatment refers to periodic regular treatment administered to livestock mainly to avoid contamination and infection during the period of more risk while Tactical treatment refers to treatment given to the

susceptible group to avoid outbreak.

14. State two ways in which vaccines are administered to livestock animals (1 Marks)

- Intravenous injection
- Orally through the mouth
- By inhalation through the nose
- Through the cloaca
- Through the eyes especially in poultry/Ocular

15. State two non-chemical methods of controlling ticks in cattle (1 Marks)

- Burning infested pastures
- Handpicking and killing of ticks
- Rotational grazing
- Double fencing of pastures
- Zero grazing/restrict movement of animals
- Ploughing infested pastures
- Use of natural enemies e.g. ox-picker.

16. State two characteristics of eggs must suitable for incubation (1 Mark)

- They should be of medium size(55-60g)
- Should be smooth shelled without cracks to keep off unwanted environmental conditions for
- the embryo
- Should be clean to avoid blocking of the micro pores on the shell that enable gaseous exchange
- Should be free from internal abnormalities e.g. blood spot
- Should be fertilized to enable formation of a zygote
- Should not be more than 10 days old otherwise there may be no embryonic development
- They should be oval shaped with a narrow and a broad end
- Should not have a double yolk

17. State two conditions that cause bees to swarm. (1 Marks)

- Sick or infertile queen
- Damage to the brood
- Absence of food and water
- Disease and pest outbreak
- Congestion in the hive
- Unfavorable weather e.g. high temperatures (1/2X2=1 Mark)

18. State two factors to consider to get optimum animal power (1 Mark)

- Animals must be handled properly
- Animals must be trained to follow verbal instructions
- Sick animals should not be used to carry out work
- When animals are working in pairs ensure that they are of the same size
- Animals should be properly fed to ensure that they have maximum energy for work
- Plough in the morning or evening when it is cool , excessive heat may affect animals (1/2X2=1Mark)

20. Give two signs of heat observed in female rabbit (1 Marks)

- Restless.
- Frequent urination.
- Swollen vulva.
- The doe throws itself on its side.
- She (doe) rubs herself against the wall or any other solid object.
- The doe tries to contact other rabbits in the next hutch by peeping through the cage walls. (1/2 X2=1 Mark)

21. State two precautionary measures in handling and caring of vaccines (1 Marks)

- Vaccines should be kept under freezing temperatures of between -20^0C to 4^0C
- Vaccination equipment should be sterilized usually by boiling only.
- Correct dosage should be adhered to.

- The route of administration should be correct (1/2X2=1 Mark)

22. Give two disadvantages of outcrossing (1 Marks)
- Harmful characteristics can be spread quickly by one bull to the offspring the bull sires.
- It requires skilled labour
- Low chances of conception because semen can die due to problems in storage and transportation/by wrong timing in respect to heat periods.
- It requires more labour than natural service i.e. taking the cow to insemination centre and checking for heat signs.

23. Give four reasons for feeding Colostrum to calves immediately after birth. (1 Marks)
- Has high nutritive value
- Contains antibodies which protect the calf from diseases
- Has laxative effect
- Highly digestible
- Highly palatable (1/2X2=1 Mark)

24. State two reasons for egg candling (1 Mark)
- Determine freshness
- Detect abnormalities
- Determine fertilized eggs
- Confirmation of chick development (1/2X2=1 Mark)

25. State two reasons for soft-shelled eggs in poultry (1 Mark)
- Lack of calcium in the feed
- Disease attack such as Newcastle (1/2X2=1 Mark)

26. Give two reasons for docking in sheep rearing (1 mark)
- To control blowfly infestation
- To ensure uniform distribution of fat
- To enable easy mating (1/2X2=1 Mark)

27. State two maintenance practices carried ou in a spray race. (1 Mark)
- Unblocking blocked nozzles
- Replacing water in the tank
- Tightening loose nuts/bolts
- Repairing damaged floor
- Sump should be cleaned regularly by removing all the sediments / accept cleaning regularly
- Broken rails should be replaced/ Repaired. (1/2X2=1 Mark)

28. State two disadvantages of battery cage system of rearing poultry (1 Mark)
- High initial capital
- High level of skills
- Fast spread of diseases in case of an outbreak
- Birds develop bruises in combs and breast
- Inadequate room for bird exercise
- Not ideal for brooding purposes (1/2X2=1 Mark)

29. Give two reasons for seasoning timber (1 Mark)
- Prevent insect damage
- Prevent fungal infestation/rotting
- To prevent warping
- To make timber easy to work on
- To increase durability.

SECTION B: 20 MARKS- ANSWER ALL QUESTIONS IN THIS SECTION

30. Prepare a livestock feed 27% DCP using Sunflower 35%DCP and Maize Germ 11% DCP using the Pearson Square Method. (1/2 X1=1/2Mark)

31. a)Diagram A below shows the reproductive system of a livestock animal. Study it carefully and answer the questions that follow.

i) Name parts F and J (1 Mark)
F-Cervix
J-Uterus

ii) State <u>one</u> functions of part G (1 Mark)
Produce ova/ovum, egg gamete/reproductive eggs
Secrete reproductive hormones/oestrogen (1X1=1 Mark)

b.) Diagram B illustrates an instrument used in cattle breeding.

i) Identify the instrument. (1 mark)
Artificial vagina (1x 1 = 1Mark)

ii) When would it be appropriate to serve a cow after the onset of heat (1 mark)
Between 12 – 18 hours at standing heat; (1x 1 = 1Mark)

iii) Apart from the method in which the above instrument is used, name two other methods of serving a cow. (1 marks)
Natural mating;
Embryo transplant; (1x 1 = 1Mark)

32. Study the diagrams below for various tools and equipment and answer the questions that follow

a) Name tools A B C and D (2 marks)
A-Drenching gun
B- Plumb bob and line

b) label parts H and J (1 Mark)
H-Beam
J-Tractor lower link attachment point (2x1/2=1 MARK)

c) state the function of part labelled K (1 Mark)

i) Rides over dead furrow stabilising the implement

ii) Adjustment of ploughing depth

d) State one operational advantage of implement labeled C over mouldboard plough (1 Mark)

i) Ploughs in field with obstacles/roots/stone without breakage

ii) Requires less power to pull/draught power (2x1/2=1 MARK)

33. The diagram below represents parts of a roof.
Identify the parts labeled A and C. (2mark)
A- Purlin;
C- Rafter (1x2=1 MARK)
State two types of materials that may be used for the part labeled D (2 marks)

i) Timber/wood

ii) Metal bars;

iii) Give one disadvantage of using thatch for the part labeled B. (1 mark)
Easily destroyed by insects/weather elements/fire (1x1=1 MARK)

<u>SECTION C: (40 MARKS) ANSWER ANY TWO QUESTIONS IN THIS SECTION</u>

34a). State five importance of keeping livestock healthy. (5 Marks)

- To increase productive life of livestock
- Healthy animals produce high quality product
- They are less expensive to keep/ Reduce cost of production/ Economical to keep
- Healthy animals give maximum production
- To prevent spread of diseases
- They breed regularly
- Fetch high market prices
- To increase work output for draught animals (1 X5=5Mark)

b). State five factors that predispose livestock to diseases. (5 Marks)

- Species-Some diseases are specific to species
- Breed of the animal-Some are more susceptible to particular diseases than others

- Age of the animal-younger animals are more susceptible to disease than mature ones
- Sex of the animal-Some diseases attack a particular case
- Environmental hygiene-wet and dirty environment predispose livestock to disease
- Size of the herd-The larger the herd per unit the higher the likelihood of transmitting and contracting diseases
- Body condition-Weak and unhealthy and pregnant animals are more susceptible to be attacked
- Animal movement-Animals which occasionally move from one place to another are more likely to be affected

c) Give five reasons for embryo transfer (5 Marks)

- The calf is born in the local surrounding to minimize effects of climatic changes.
- It is possible to screen and marked sexed embryos to minimize the number of male calves
- It controls sexually transmitted diseases/breeding diseases
- Embryos can be stored for a long time awaiting for a recipient female
- It allows faster multiplication of a superior animal/breed i.e. a cow can produce 12-15 embryos per year.
- It stimulates production of milk in females that were not ready/able to produce milk.
- Can be used as a study/research tool on a given sire/dam because many offsprings can be produced within a short time for observation.
- It allows the embryo to obtain passive immunity from the surrogate mother.
- The use of embryo saves the cost of production on rearing bulls
- Embryos are cheaper than animals of equal value.
- Embryo are easy and cheap to transport in test tubes compared to live animals.
- High yielding embryos can be implanted into less valuable females to improve production in the calves obtained.
- Easy to plan for breeding
- Prevents injury of cow by heavy bulls. (1X5=5 Mark)

d) Discuss the parts of a barbed wire fence (5 Marks)

- Strainers-large posts that are put at the corners and gates posts to take the strain of the wire pulling in one direction
- Struts-posts that are attached to the strainers to support and strengthen them
- Standard or intermediate posts-post located between the corners to provide attachment to the barbed wire
- Droppers-thin posts inserted between intermediate posts to prevent sagging of wires
- Gates-allow animals to move in and out of enclosed area
- Pass-an opening in the fence which will allow passage of people but not animals (1X5=5 Mark)

35.a) Describe the procedure of training a calf to take milk from a bucket (5 Marks)

Put clean milk in a clean and shallow

- Ensure your fingers are clean
- Hold the bucket with the left hand , and insert 2-3 fingers of your right hand into the milk , and then into the calf's mouth, repeatedly
- With the fingers in the calf's mouth guide it into the bucket containing milk, and ensure that the finger are submerged
- Ensure that the bucket is raised off the ground, and the calf's head is slightly raised

When the calf learns to take milk from the bucket i.e. about 1.5 days feeding lessons , let it drink on its own. (1X5=5Mark)

b) Outline the procedure followed when hand-spraying cattle to ensure effective use of acaricide to control ticks (5 Marks)

- Read the manufacturer's instructions carefully
- Mix the acaricide appropriately
- Pour the chemical solution into the knapsack sprayer through the sieve/stir up pump container
- Restore in the animal
- Spray along the back to loin
- Spray the sides

- Spray under the belly including the udder/ scrotum
- Spray the rear/ hind quarters
- Spray forelimbs
- Spray the face, the ears last
- Allow the animal to drain the chemical
- Release the animal (1X5=5Mark)

c. Discuss Foot Rot disease under the following sub headings

i)Causal Organism (1Mark)

A bacterium/Fusiformis species (1X1=1Mark)

ii)Predisposing factors (2 Mark)

- Dirty and overgrown hooves/ untrimmed hooves
- Presence of injurious objects e.g. stones, nails
- Injuries /wounds on hooves
- Muddy / filthy living / grazing areas
- Invasion of hoof by other organisms e.g. tick bites which cause injuries. (1X2=2Mark)

iii) Symptoms of attack (2Mark)

- Animal limps as it walks
- Foot infected is swollen
- Infected hoof produce pus
- Foul smell is produced from the infected hooves
- Animal may become lame in severe cases / inability to walk.
- Infected foot feels hot upon touch
- Lack of appetite / anorexia
- Animal become emaciated/ weak/ loss of condition
- Animal graze when kneeling in case forelegs are infected
- When all legs are infected, the animal graze when lying down (1X/2=2Mark)

iv)Control Measures (2Mark)

- Treat wounds on hooves using appropriate antibiotics
- Let the animals walk on appropriate foot bath
- Isolate infected animals from healthy ones
- Ensure the environment of the animal is not damp and muddy
- Practice hoof trimming regularly
- Treat sick animals with appropriate antibiotics.
- Graze animals in areas free from sharp objects.
- Move healthy sheep to dry clean areas.
- Walk sheep on foot bath with appropriate chemicals solution e.g. formalin and blue vitriol
- (copper sulphate) (1X2=2Mark)

d). State the factors to consider when siting a farm structure (3 Marks)

- Security-the building should be in a secure place
- Accessibility-should be near roads foe ease of transportation of farm inputs and produce
- Soil type-should be located in unproductive land to avoid wastage of productive land
- Drainage-should be located on gentle slope to avoid wastage
- Nearness to water source-to minimize cost of transportation
- Relation between structure-structures with related uses should be located close to each other
- Wind direction-structures that release bad smell should be on leeward side of the homestead
- Farmers preference-some prefers setting them under trees while others prefer on open space
- Future expansion-space should be left for future expansion if need arise

36.a) Describe how a four stroke cycle Engine works (12 Marks)

Induction stroke

Piston moves down the cylinder causing the inlet value to open drawing in fresh supply of petrol

vapor and air into the cylinder.

Compression stroke

The inlet valve closes and the piston moves up the cylinder. This compresses the fresh fuel mixture in the combustion chamber.

Power stroke

A spark is produced at the spark plug. This causes the fuel mixture to ignite and expand resulting in pressure that forces the piston to move down the cylinder.

Inlet/outlet valves closed

Exhaust stoke

The piston moves up the cylinder to eliminate the burnt fuel mixture through the open exhaust valves.

(Naming 1 mark, explanation 2 marks)

b) Describe the procedure for calf rearing from birth to weaning (8 Marks)

- In the first week, the calf should be fed on colostrums ad libitum;
- In the second and third weeks; it is fed on 3.5; and 4.0kg; of whole milk per day respectively;
- From the 4^{th} week; whole milk is gradually replaced with a mixture of whole and skim milk.
- The milk should be a t body temperature;
- Calf pellets/pencils should be introduced gradullay from the third week;
- Green fodder should be gradually introduced from the third wee;
- Milk should be divided initially into three equal parts; and finally into two equal parts;
- The amount of whole milk fed should be reduced as the calf grows;
- Skim milk should be increased as whole milk reduces;
- From the 7^{th} week the calf is not fed on whole milk;
- Concentrates should be increased as the calf copes with bulky solid feeds;

KIRINYAGA EAST CLUSTER EVALUATION
443/1
PAPER ONE
TIME: 2 HOURS.
SECTION A (30MARKS)

SECTION A (30 Marks)

1. Outline six factors to consider in choosing a farming system. (3 marks)
2. List three aspects of light that influences crop growth. (1½ marks)
3. State four factors that one consider when selecting garden tools for cultivation. (2 marks)
4. State two types of metal pipes used on the farm. (2 marks)
5. Name two types of inventory records. (1 mark)
6. Sate two crop production practices carried after planting to achieve optimum plant population.
7. State four functions of boron in crop development. (2 marks)
8. a) What is solifluction? (½ mark)
   b) State three factors affecting solifluction. (3 marks)
9. State four symptoms of viral attack in crop pest. (2 marks)
10. At what stage in the growth of beans should mechanical /weed control be avoided. (1 mark)
11. State two factors that would determine the economic performance of a lease hold land tenure system.
12. Name one vegetative material used to propagate each of the following crops. (2 marks)
    i. Irish potatoes
    ii. Pineapples
    iii. Bananas
    iv. Pyrethrum
13. State four factors to consider when choosing a nursery site. (2 marks)
14. State four factors which may affect the quality of hay. (2 marks)
15. a) Define soil fertility. (½ mark)
    b) List five characteristics of a crop grown for green manure. (3½ marks)

SECTION B (20 Marks)

16. Soil sample weighing 120gms was heated in an oven at 105◦C. The dry soil was weighed and the weight recorded as 112gms. The soil was then heated strongly after which was recorded as 106gms.

i. Calculate the percentage content of water in the initial soil sample. (2 marks)
ii. Calculate the weight of humus in the sample. (1 mark)
iii. Find the percentage content of humus in the soil sample. (2marks)

17. The illustration below represents a financial document. Study it carefully and answer the questions that follow.

No: 2004 **Date: 26/03/2024**
M/S JOY MILLERS FARMERS STORE

DR……BARAGWI FARMERS CO-OP UNION
BOX 21, KIANYAGA

	Particular	**Quantity**	**Price per unit**	**Amount**
1.	Layers mash	20 bags	1,200.00	24,000.00
2.	Urea	5bags	3,000.00	15,000.00
3.	Sorghum seeds	10 pkts	300.00	3,000.00
	Delivery details	Total		42,000.00

Discount - None
Terms of payment: Cash in 30days upon receipt of goods signature Official Stamp

(a) Identify the document illustrated above. (1mark)
(b) State **two** functions of the document. (2marks)

(c). Name two other financial documents (2 marks)

18. The diagram below represents field crop pest.

i. Identify the crop pest. (1 mark)

ii. Name one crop attacked by the crop pest. (1 mark)

iii. State three ways in which the pest can be controlled. (3 marks)

19. Study the diagram of the silo below and answer the questions that follow.

i. Identify the method of ensiling above. (1 mark)

ii. Give functions of the parts labeled **w** and **x**. (2 marks)

iii. Name two other methods of forage preservation. (2 marks)

SECTION C (40 Marks)

Answer any two questions from this section

20. a) Describe the practices that a farmer should carry out to ensure uniform germination of seeds.

b) State and explain six cultural methods of weed control. (12 marks)

21. a) Describe the process involved in water treatment using a chemical treatment system.

b) Explain eight effects of fragmentation and sub-division of land. (8 marks)

22. The table below shows the demand and supply of potatoes at Kutus market.

PRICE	QUANTITY DEMANDED (IN BAGS)	QUANTITY SUPPLIED (IN BAGS)
1200	50	250
1000	90	200
800	150	150
600	225	70
400	335	0

(a) Using suitable scales draw and label a graph showing the relationship between the demand and supply of potatoes at Kutus market. (8mks)

(b) What is the equilibrium price of the potatoes? (1mk)

(c) From the graph determine;

The number of bags of potatoes that would be bought if the price per bag is Ksh.900 (1mk)

d) Mention five factors that influence demand of a product (5mks)

e) Outline the agricultural services available to farmers. (5mks)

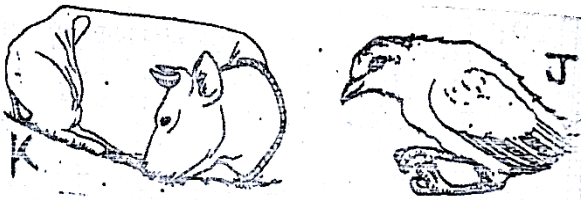
KIRINYAGA EAST CLUSTER EVALUATION
443/2
PAPER TWO
TIME: 2 HOURS.

SECTION A (30MARKS)
Answer all the questions in this section in the spaces provided

1. Name a breed of camel with two humps (1/2mks)
2. State **two** types of roughages as used in livestock nutrition (1mk)
3. Give **two** reasons why it is advisable to dehorn cattle (1mk)
4. Give **three** properties of clean milk ($1^1/_2$mks)
5. Name the tool or equipment used to carry out the following routine livestock practices
   a) Castration (1/2mks)
   b) Vaccination (1/2mks)
6. What is the role of iron in livestock nutrition? (1mk)
7. List **two** importance of fish farming in Kenya (1mk)
8. Name **two** hormones that in fluence milk let-down in dairy cattle (1mk)
9. Name **two** exotic breeds of dairy goats reared in Kenya (1mk)
10. What is the role of a crop in the digestion system of poultry? (2mks)
11. Name **two** zoonotic diseases of livestock (1mk)
12. Give **four** routine practices carried out during calf rearing (2mks)
13. State **two** factors that determine the amount of water required by an animal (1mk)
14. List **three** methods of outbreeding as used in livestock nutrition ($1^1/_2$mks)
15. Outline **fou**r conditions necessary for artificial incubation (2mks)
16. List **three** sources of lipids in livestock diet ($1^1/_2$mks)
17. Name **two** parasites of bees (1mk)
18. State **four** qualities of an ideal calf pen (2mks)
19. Give **four** reasons why stones are good as construction materials (2mks)
20. Name a disease transmitted by the following vectors (1mk)
    a) Tsetse fly
    b) Brown ear tick
21. List **four** requirements in a deep litter house (2mks)
22. Give **two** causes of soft shells in eggs (2mks)

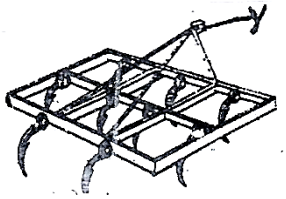
SECTION B (20MKS)
Answer all questions in this section in the spaces provided

23. Study the diagram and answer questions that follow.



    a) Identify the condition or deficiency disease as illustrated in J and K above
    b) Name cause of the deficiency condition in J,K
    c) Give **one** remedy to control condition K in lactating cows (1mk)

24. Below is a diagram illustrating a farm implement. Study it and answer the questions that follow.

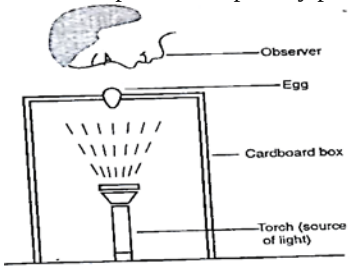


a) Identify the implement (1mk)
b) State:
(i) The role of the part labelled Y (1mk)
(ii) **Three** uses of the implement on the farm (3mks)
c) List **two** maintenance practices carried out on the implement (2mks)

25. The diagram below represents methods of identifications in livestock. Use them to answer questions that follow.

a) Name the **three** methods shown above ($1^1/_{2mks}$)
b) State **three** importance of identification methods shown above ($1^1/_2$mks)

26. The diagram below illustrates a common practice in poultry production



a) Identify the practice (1mk)
b) Give abnormalities of eggs that can be observed using the above illustrated practice (4mks)

SECTION C (40MKS)

Answer any two questions from this section in the spaces provided after question 29

27. a) Discuss causes and control of cannibalism in poultry. (10mks)
b) Highlight various measures that famers undertake to control tapeworms (5mks)
c) Explain the importance of steaming up in dairy cattle (5mks)

28. a) Describe the precautions undertaken while handling farm tools and equipment (10mks)
b) Discuss contagious abortion disease under the following sub headings:
i) Animals attacked (2mks)
ii) Casual organism (2mks)
iii) Symptoms (2mks)
iv) Control measures (4mks)

29 a) Discuss the structural and functional differences between petrol and diesel engines (10mks)
b) Describe general characteristics of indigenous cattle breeds (5mks)
c) Outline five general methods of disease control in livestock (5mks)

KIRINYAGA EAST CLUSTER EXAMINATION
MARKING SCHEME
Agriculture
Paper 1

SECTION A (30 Marks)

1. Outline six factors to consider in choosing a farming system.
- Size of the farm/scale of land and other factors of production
- Type of soil in the area.
- Environmental factors
- Availability of resources.
- Cultural/social factors.
- Aims of the enterprise.
- Farmers knowledge and skills**.** **3 marks**

2. List three aspects of light that influences crop growth
- Light intensity.
- Light duration.
- Light wavelength.(**1.5 marks)**

3. State four factors that one consider when selecting garden tools for cultivation.
- Soil type.
- Vegetation cover.
- Cost of the tool.
- Skill required.
- Availability of the tool.
- Capital availability.
- The desired depth of tillage **2 marks**

4. State two types of metal pipes used on the farm.
- Galvanized iron pipe.
- Aluminium pipes. **2 marks**

5. Name two types of inventory records.
- Permanent goods inventory records
- Consumable goods inventory record **1 mark**

6. Sate two crop production practices carried after planting to achieve optimum plant population.
- Thinning
- Gapping
- pet and disease control **1 mark**

7. State four functions of boron in crop development.
- Necessary for sugar translocation.
- Needed in water absorption.
- Help in calcium neutralization.
- Aids in fruit development **2 marks**

8.a) What is solifluction?

This is the gravitational flow of surface materials saturated with water.

b) State four factors affecting solifluction.
- The slope of land.
- The nature of material.
- Climate.
- Vegetation cover.
- Human activities.
- Forces within the earth's crust **3 marks**

9. State four symptoms of viral attack in crop pest.
- Leaf chlorosis
- Leaf curling

- Mosaics
- Malformation
- Rosetting.**2 marks**

10. At what stage in the growth of beans should mechanical /weed control be avoided.
- At flowering stage 1 mark

11. State one factor that would determine the economic performance of a lease hold land tenure system.
-Length of lease.
-Method of rent payment.

12. Name one vegetative material used to propagate each
i. Irish potatoes- stem tubers.
ii. Pineapples-crowns,sucker,slip
iii. Bananas-suckers
iv. Pyrethrum
-splits **2 marks**

13. State four factors to consider when choosing a nursery site.
- Nearness to the water source.
- well drained fertile soil.
- gentle sloping land
- Previous cropping
– Secure place
- Well sheltered place. **2 marks**

14. State four factors which may affect the quality of hay.
- Forage species used.
- Stage of harvesting.
- Length of the drying period.
- Weather condition during the drying process.
- Condition of the storage structure. **2 marks**

15. a) Define soil fertility.
-*This is the ability of the soil to provide crops with the required nutrients in proper proportions* for high production.**(0.5marks)**

b) List five characteristics of a crop grown for green manure.
- Should be highly vegetative.
-Should have a fast growth rate
Should have a high nitrogen content.
-Plants must be capable of rotting quickly.
-Plants should be hardy,capable of growing in poor condition.**. 3.5 marks**

SECTION B (20 Marks)

16. Sample weighing 120gm was heated in an oven at 105◦C. The dry soil was weighed and the weight recorded as 112gm. The soil was then heated strongly after which was recorded as 106gms.
i. Calculate the percentage content of water in the initial soil sample. **(2 marks)**
120 -112= 8 gms 8/120x100%= 6.666%
ii. Calculate the weight of humus in the sample. **(1 mark)**
=112gms-106gms=6 gms
iv. Find the percentage content of humus in the soil sample. **(2marks**
Percentage humus in sample =weight of humus/weight of the dry soil taken
6gms/112gmsx100%=5.357%

17. (a) Invoice

(b) Functions of the invoice
(i) Written by sellers to show the buyer of goods bought on credit
(ii) Confirm to the buyer the goods delivered
(iii)Reminds the buyer of date due for payments **2x1 = 2mks**

c) Other financial documents 2x1 = 2mks

-cash receipt/receipt
-purchase order
-delivery note

18.The diagram below represents crop pest.

i. -Maize stalk borer

ii. Name one crop attacked by the crop pest. (1 mark)

-Maize

iii. State three ways in which the pest can be controlled. (3 marks)

-Use of resistant variety.
-Use of field hygiene.
-Use of crop rotation**. 3 marks**

19. Study the diagram of the silo below and answer the questions that follow.

i. Identify the method of ensiling above. (1 mark)

-Trench silo

ii. Give **functions of the parts labelled w and x. (2 marks)**

W -prevent water and air entering into the silo.
X -To drain off rain water.

iii. Name two other methods of forage preservation. (2 marks)

-Hay
-Standing forage

SECTION C (40 Marks)

20.a) Describe the practices that a farmer should carry out to ensure uniform germination of seeds.

- Selecting seeds of the same size, age, variety and free from disease and pest.
- Planting the seeds at the same time.
- Preparing seeds at the same time.
- Preparing the whole field to the required uniform tilth.
- Planting at the right moisture content of the soil.
- Treating the seeds against soil borne pests and diseases.
- Planting at the correct depth.
- Treating the seed before planting to break seed dormancy. (1 x 8 each=8 marks)

b) State and explain six cultural methods of weed control. (12 marks)

- Mulching-Mulch smothers weeds, thus preventing weed growth.
-Cover cropping- smother the weeds.
-Crop rotation- Those associated with certain crops would not grow if those crops are not grown e.g. striga and some cereal crops
. -Timely planting- This allows crops to establish early before weeds, thus smothering them.
-Use of clean seed/planting materials- this prevents the introduction of weeds to the farm land.
-Proper spacing- This helps to create little space for weed growth and forming a canopy which suppresses weeds.
-Clean seedbed-crop germinates in a weed free environment and effectively compete with them.
-Flooding- Discourages the growth of all non-aquatic weeds. (Stating =1mk explanation =1 mk)

21. a) Describe the process involved in water treatment using a chemical treatment system. (12 marks)

Stage 1: Filtration at water intake - water is made to pass through a series of sieves.
Large particles of impurities are trapped by these sieves.
State II: Softening of water-soda ash and alum are added into water. Soda ash softens the water while alum helps to coagulate solid particles which finally settle down to the bottom of sedimentation tank.
Stage III: Coagulation and sedimentation - water stay in this tank for at least 36 hours to kill bilharzia worms.
Stage IV: Filtration- water is passed through a filtration tank that removes all remaining solid particles.
Sate V: Chlorination- A small amount of chlorine solution is added into water. The chlorine is used

to kill micro-organisms in water.
Stage VI: Storage of Treated water, water is stored in large tanks before distribution

b) Explain eight effects of fragmentation and sub-division of land. (8 marks)

- Time is wasted while travelling from one holding to another or from the farmstead to the various fragments
. -Proper and effective control of weeds and pests become difficult.
-Difficulties of following a sound farm plan.
-Difficulties in the supervision of the scattered plots.
-Difficult to control livestock parasites and diseases.
-Difficulties in carrying out various soil conservation measures.
-It is impossible for the farmers to restrict grazing in one holding only.
-Difficulties of offering agricultural extension advice.
-Poor agricultural productivity. **(1 x 8 = 8 marks)**

22. Graph a) Axes 2x1= 2
Plotting - 2x1 =2
Curves - 2

- Neatness/ suitable scale, covering ¾ pages 2 marks. **TOTAL (8 marks)**

(b) Kshs.800 **(1mk)**

(c) 120 bags (**1mk)**

b) Factors influencing demand (5x1=5mks)

- Population
- Income of consumers
- New inventions
- Taste and preference of the individual
- Price of substitute commodities
- Price expectations
- Advertisement
- culture and social value
- Price of commodities having faint demand

c) Agricultural services available to farmers

- Extension and training
- Banking services
- Artificial insemination service
- Agricultural Research organization
- Farm input supply service
- Marketing outlets **(5x1=5mks)**

KIRINYAGA EAST CLUSTER EVALUTION
AGRICULTURE
443/2
MAKING SCHEME

SECTION A

1.	Bactrian	**($^1/_2$ mk)**
2.	Succulent roughages	**2x $^1/_2$ =(1mks)**
	Dry roughages	
3.	Dehorned animals use less space	
	For easy handling of animals(make animal docile)	
	To prevent injury to the farmer and other animals	
	Prevent destruction of farm structures	**2x ½ =(1mks)**
4.	Free from pathogens	
	No hair, dirt or dust	
	Has good flavour	
	Its chemical composition is within the expected standards	
	It is of high keeping quality	**3x ½ = ($1^1/_2$mks)**
	Should be pure white in colour	
5.	a) Burdizzo	
	Rubber ring	
	Elastrator	
	Scalpel	**(1 x ½ = ½ mks**)
b)	Hypodermic needle and syringe	
	Drenching gun	**(1 x ½ = ½ mk)**
6.	Formation of haemoglobin in blood	**(1mk)**
7.	Source of income to the farmer	
	Source of food/ source of protein	
	Source of employment	
	Source of raw materials to industries	**2 x ½ = (1mk)**
8.	Oxytocin	
	Adrenaline	
	Prolactin	**2 x ½ = (1mk)**
9.	Saanen	
	Toggenburg	
	British alpine	**2 x ½ = (1mk)**
10.	Moisten the food	
	Temporary storage of food	**(2 x 1 =(2mks)**
11.	Brucellosis	
	Rabies	
	Tuberculosis	
	Anthrax	**2 x ½ = (1mk**)
	Mastitis	
12.	Feeding	
	Parasite control	
	Disease control	
	Castration	
	Removal of extra teat	
	Identification	**4x ½ = (2mks)**
13.	Ambient temperatures	
	Type of food eaten by animal	
	Level of production	
	Amount of work done by an animal	
	Weight/body size of an animal	

Species of an animal **2 x ½ = (1mk)**

14. Outcrossing
Upgrading
Cross breeding **3 x ½ = (1 ½ mks)**

15. Temperature must be maintained at 37.5^0c – 39.4^0c
There should be enough air circulation
Relative humility must be maintained at 60%
Egg turning **4 x ½ = (2mks)**

16. Oil seed by products e.g cotton seed cake
Animal's products and by-products e.g milk, bone meal
Pasture foliage **3 x ½ = (1 ½ mks)**

17. Wax moth
Ants
Honey badger
Bee louse **2 x ½ = (1mk)**

18. Well ventilated
The roof should be leak proof
Draught free
Proper lightning
Single housing **4 x ½ = (2mks)**

19. Fire resistant
Durable
Resistance to insect damage
Resistance to weathering **4 x ½ = (2mks)**

20. a) Trypanosomiasis/ nagana rej: sleeping sickness
b) East coast fever **(½ mk)**

21. Litter
Feed troughs
Water troughs
Roosts or perches
Nests
Laying nests **4 x ½ = (2mks)**

22. Deficiency of calcium
Deficiency of vitamin D
Marek's disease **(2mks)**

SECTION B

23. a) J – Curled toe paralysis **(1 x 1 =1mk)**
K – Milk fever **(1 x 1 = 1mk)**
b) J – Deficiency of vitamin B2 (1 x 1 = 1mk)
K- Deficiency of calcium **(1 x 1 = 1mk)**
c) Treatment using calcium borogluconate solution intravenously
Providing feeds rich in calcium **(1 x 1 = 1mk)**

24. a) Spring tine harrow **(1 x 1 = 1mk)**

b) i) For attachment of the implement to the tractor. **(1 x 1 = 1mk)**
ii) Break up soil clods
Level seedbed
Improve soil aeration
Collects trash
Removal of rhizomatous weeds from the soil
eg Couch grass **(2 x 1 = 2mks)**

c) Clean after use
Tighten loose nuts and bolts

Lubricate moving parts
Replace worn out tires
Paint metallic surface when storing
Implement for long **(2 x 1 = 2mks)**

25. a) 1 - Ear tagging
2 - Ear notching
3 -Neck strap **(3 x ½ = 1 ½ mks)**

b) For selection and breeding
Disease control and treatment
Feeding
Record keeping
Culling **(3 x ½ = 1 ½ mks)**

26. a) Egg candling
b) Double yoked egg
Blood spot in egg
Cracks in shell
Broken egg shell
Whether the egg is very porous **(4 x 1 = 4mks)**

SECTION C

27. a**)** **Causes**

- Imbalanced diet: A diet deficiency in nutrients leads to the birds practicing cannibalism
- Overcrowding makes birds easily detect moving organisms on each other
- Too bright light in the poultry house
- Introduction of new birds in the flock
- Prolapse of the cloaca in laying birds
- Presence of external parasites on the birds e.g poultry lice **(5 x 1 = 5mks)**

Control

- Provide adequate floor space for the birds
- Feed birds on a balanced ration
- Keep birds according to age groups
- Cull perpetual cannibals
- Isolate and treat injured bird
- Debeaking aggressive cannibals
- Hanging green edible vegetables to keep birds busy **(5 x 1 = 5mks)**

b) Routine deworming using suitable drugs
Proper disposal of human waste
Practicing rotational grazing
Proper meat inspection
Ploughing pasture land to kill cysts **(5 x 1 = 5mks)**

c) Promote production of high quality colostrum in the next lactation
Ensure rapid growth and development of foetus to ensure healthy and strong calf at birth
Build up enough body reserves for the cow before the next parturition
Build up energy for nutrition
Increases and maintains high milk yield after birth
Promote good health of the mother **(5 x 1 = 5mks)**

28. a) Tools should be left in a safe place after use
Use the correct tool for the correct purpose
Maintain tools and service them to remain in good working condition and last longer
Tools should be handled correctly when in use to avoid damage to the tool and injury to the user.
Use safety devices i.e fire extinguishers and first aid kits in the workshop to reduce accidents.
All tools should be stored properly in tool cabinets or in tool racks to prevent injury

b) i) Cattle
Sheep
Goat
Pigs **(2 x 1 = 2mks)**

ii) *Brucella abortus* (in cattle)
Brucella suis (in pigs)
Brucella malitensis (in goats and sheep) **(2 x 1 = 2mks**)

iii) Spontaneous abortion/ premature birth
Retained after birth/ placenta
Bareness in cows and low libido in bulls.
Yellowish, brown, slimy, odourless discharge from the vulva after abortion

iv) **Use of AI**
Cull and slaughter all affected animals
Vaccinate all young animals.
Avoid contact with the aborted foetus
Carry out blood test/ screening for animals selected for breeding.
Maintain high hygiene in the farm. **(4 x 1 = 4mks)**

29. a)

• Petrol engine • Has carburetor • Fuel and air are mixed into the carburetor before getting into the engine cylinder • Fuel is ignited by an electric spark • It produces less smoke because petrol is fully burnt. • Petrol engine is light in weight and suited for light duties.	• Diesel engine • Has an injection pump • Fuel and air are mixed within the cylinder • Fuel is ignited by compression of air and fuel mixture in the cylinder • Produces a lot of smoke because diesel is partially burnt. • Diesel engine is relatively heavy and suited for heavy duty.

(rej: any answer that does not give a comparative response) **(5 x 2 = 10mks**)

b) They have hump that store fat
Highly tolerant to high temperature
High resistance to tropical diseases
They can walk for long distances in search of food and water
They have long calving intervals of more than one year
They have low production of both meat and milk
They have slow growth rate leading late maturity **(5 x 1 = mks)**

c) Vaccination
Disinfection and use of antiseptics
Proper nutrition
Proper hygiene
Quarantine
Proper housing
Isolation and treatment of sick animals
Prophylaxis
Proper breeding and selection **(5 x 1 = 5mks)**

MERU CENTRAL
AGRICULTURE
PAPER 1

SECTION A (30mks)

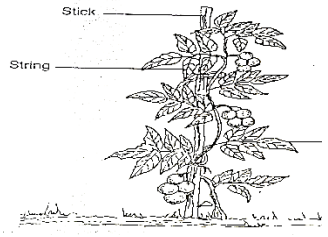
Answer all the questions in this section

1. State two forms of horticultural crops (1mk)
2. Stte two causes for land fragmentation (1mk)
3. Give two form in which nitrogen is absorbed from the soil by plants (1mk)
4. State four financial documents that should be kept on a farm (2mks)
5. Give four methods of harvesting trees in the farm (2mks)
6. State four advantages of shifting cultivation in farming (2mks)
7. State four characteristics of nitrogenous fertilizer (2mks)
8. Give two forms of collective land tenure system (1mk)
9. State four methods of harvesting water on the farm (2mks)
10. State two advantages of earthing up in crop production (1mk)
11. Give four biotic factors that influence Agricultural production (2mks)
12. Give four practices aimed at achieving minimum tillage (2mks)
13. State three methods of preparing planting materials before planting
14. Differentiate between seedling bed and nursery bed (1mk)
15. State four reasons for treating water in the farm (2mks)
16. Name two conditions when opportunity cost is zero (1mk)
17. Differentiate between a dam and weir (1mk)
18. State four reasons why green manure is not commonly used in the farm (2mks)
19. State three characteristics of a good grain store
20. State two pests that attack tomato plant (1mk)

SECTION B

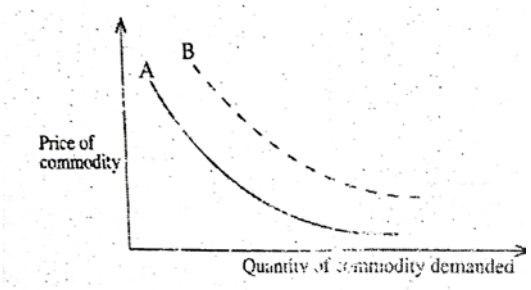
ANSWER ALL THE QUESTIONS IN THIS SECTION

21. Below is a drawing illustration a certain practice carried out on crops



(i) Identify the practice (1mk)
(ii) Name two crops in which the above practice is carried out (2mks)
(iii) Name two reasons for carrying out the practice (2mks)

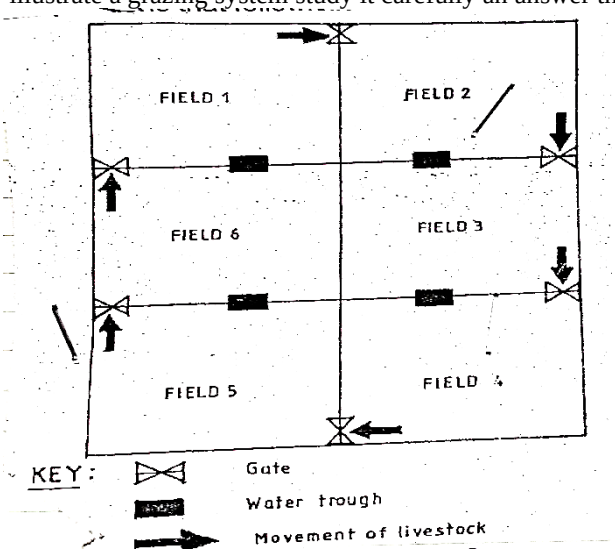
22. The diagram below illustrates the law demand in Agricultural marketing. study it and answer the questions that follow



(a) Give a reason for the shape of the curve labelled A (1mk)

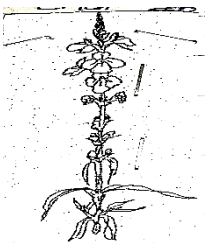
(b) If the price of the commodity remains constant explain four factors that can cause the curve to shift from A to B (4mks)

23. The diagram below illustrate a grazing system study it carefully an answer the questions that follow



a) Identify the grazing system (1mk)
b) State four advantages of the grazing system illustrated above (4mks)

24. The diagram bellow Illustrate a parasitic weed. Study the diagram carefully and answer the questions that follow



a) Identify the weed illustrated above (1mk)
b) Name two crops the weed illustrated above commonly attack (2mks)
c) State two methods of controlling the weed illustrated above (2mks)

SECTION C (40MKS)

25. (a) Explain five reasons for carrying out prunning (5mks)
(b) Explain five marketing functions in agricultural marketing (10mks)
(c) Explain five precautions that should be observed during harvesting of pyrethrum (5mks)

26. (a) Describe how soil loses fertility (10mks)
(b) Explain five factors that determine spacing in crops (10mks)

27. (a) Explain five factors that determine the quality of farm yard manure (10mks)
(b) Describe the production of dry beans under the following subheadings
i) Land preparation (4mks)
ii) Planting (4mks)
iii) Varieties (2mks)

MERU CENTRAL
443/2
AGRICULTURE
PAPER 2

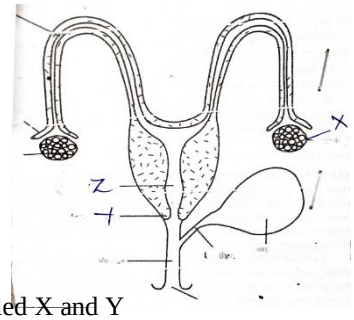
SECTION A (30MKS)

1. Name four breeds of sheep reared in Kenya (2mks)
2. Name four strokes cycles of an engine (2mks)
3. State four methods of dehorning in cattle management (2mks)
4. Give four ways in which infectious diseases can spread from one livestock to another within a farm (2mks)
5. Give two reasons why camels are able to survive in their natural habitat (1mk)
6. Give four maintenance practices carried out on a wheel barrow (2mks)
7. State three methods of selection in livestock production
8. State four control measures of roundworms (Ascans lumbricoides) infestation in livestock (2mks)
9. Give four cultural uses of livestock in Kenya (2mks)
10. Give two ways in which proper nutrition helps to control livestock diseases (1mk)
11. (a) State two reasons for spreading a damp proof course (PVC) on foundation during construction of farm buildings (2mks)
    (b) Give four reasons for candling eggs in poultry production (2mks)
12. Give two reasons for having a footbath in cattle dip (1mk)
13. State for characteristics of roughages (2mks)
14. State two signs of heat in cattle (1mk)
15. State two characteristics that would be observed on chicks when the brooder temperatures are high (1mk)
16. Define the following terms
    (i) Steaming up (1mk)
    (ii) Flushing (1mk)
17. List three source of farm power in the farm

SECTION B (20MKS)

ANSWER ALL THE QUESTIONS IN THIS SECTION

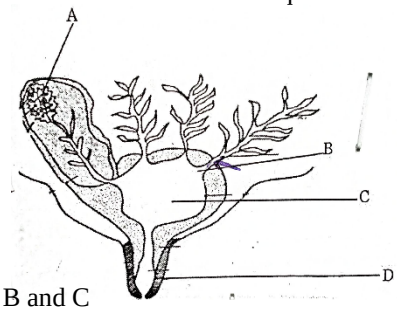
18. The diagram below shows a reproduction system of a cow; study it carefully and answer the questions that follow



a) Name the parts labelled X and Y (2mks)
b) Give two functions of the part labelled X (2mks)
c) Name one disease that can be transmitted to the above reproductive system through Natural mating

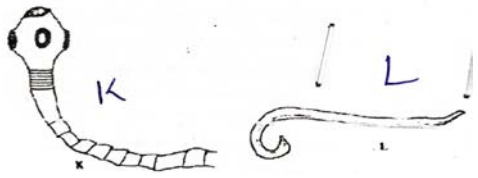
19. A farmer is required to prepare 200kg of dairy meal containing 18% DCP. Using the Pearson's square method calculate the quantity of sunflower 34% DCP and maize germs 7% DCP the farmer requires for dairy meal. (5mks)

20. The diagram below represents the structure of the quarters at the cow's udder. Study it and answer questions that follow.



(a) Name the parts labelled B and C (2mks)
(b) Name the process that takes place in the part labelled A and the hormone that controls it (2mks)
(c) State the function of the muscle labelled D (1mk)

21. Below are diagrams of intestinal parasites study them carefully and answer the questions that follow



(a) Identify the parasites labelled K,L (2mks)
(b) Name the developmental stage of the parasite labelled K in the cattle muscles (1mk)
(c) Outline the procedure of handling a heifer when administering a liquid deworming drug to control the parasites illustrated above (2mks)

SECTION C
ANSWER ANY TWO QUESTIONS FROM THIS SECTION

22. (a) State five characteristics of beef cattle (5mks)
    (b) Explain five causes of cannibalism in poultry (10mks)
    (c) Give five the differences between a disc plough and mouldboard plough (5mks)
23. (a) Explain five essentials of clean milk production (10mks)
    (b) State six general uses of fences in the farm (6mks)
    (d) Give four reasons for proper care and maintenance of farm tools (4mks)
24. (a) Discuss foot and mouth disease under the following subheadings
    (i) Causal organism (1mk)
    (ii) Livestock species attacked (2mks)
    (iii) Symptoms of attach (4mks)
    (iv) Control (3mks)
    (b) State five importance of keeping livestock healthy (5mks)
    (c) State five reasons why bees swarm (5mks)

MERU SUB COUNTY JOINT EXAM
AGRICULTURE
443/1
PAPER 1
MARKING SCHEME

1.
- Olericulture
- Pomology

2. Floriculture **)**
- Shift cultivation
- Traditional system
- Population pressure on a limited area of land
- Accumulation of land holdings
- Traditionally land may be offered to settle depts**.**

3.
- Nitrate ions (NO_3)
- Ammonium ions (NH^+_4)

4.
- Receipts
- Invoice
- Statements
- Purchase order
- Delivery note

5.
- Coppicing
- Lopping
- Pollarding
- Training
- Pruning

6.
- No pest and disease build up.
- Low capital requirement
- No land disputes as land is owned by community
- Soil structure is maintained

7.
- Highly soluble in soil water
- Easily leached to lower horizons
- Have short residual effect
- Have scorching/ burning effects on plants
- They are highly volatile
- They are hygroscopic
- They are highly corrosive

8.
- Co-operative land tenure system
- State ownership
- Communal

9.
- Rock catchment
- Roof catchment
- Weirs/ dams
- Retention ditches
- Micro - catchment
- Water ponds

10.
- Improves tuber formation / expansion
- Improves drainage around crop
- Conserves water
- Facilitates east harvesting

11.
- Pests
- Parasites
- Decomposers
- Pollinators
- Preditors
- Decomposers
- Weeds

12.
- Mulching
- Use of herbicides
- Restricted cultivation
- Uprooting weeds
- Slashing weeds
- Timing cultivation

13.
- Breaking seed dormancy
- Seed inoculation
- Chitting
- Seed dressing

14. Nursery bed is special seedbed prepared for raising seedlings before transplanting while a seedling bed is a special type of nursery bed used to raising seedling which have been removed from nursery bed due to overcrowding

15.
- Kill disease causing organisms
- Remove chemical impurities like excess fluoride harmful to human beings
- Remove bad smell and bad taste
- Remove solid/sediments in water

16.
- When there is no alternative or choice
- When goods are limited in supply
- Free donation or gifts

17. Weir is a barrier constructed across the river to raise the water level and allows excess water to flow over it. A dam is a barrier constructed across a river or dry valley to hold water and raise its level to form a reservoir or a lake

18.
- Takes time to decompose and may delay next planting
- Most of the crops are grown as food crops
- Green manure crops use most at the soil moisture and nutrients.
- Most nutrients are used up by micro – organisms during decomposition.

19.
- Rat/ vermin proof
- Well ventilated
- Easy to load and off load
- Pest free
- Leak proof
- Well secured to minimise theft

20.

- American bollworm
- Cutworm
- Red spider
- Nematodes
- Mite

21. (i) Staking
(ii) Tomato
- Beans
- Peas

(iii) Makes harvesting easy
- Facilitate easy spraying
- Harvesting clean fruits
- Reduce incidences of soil borne pests **(2mks)**

22. a) As the price of the commodity increases the quantity demanded decreases and vice versa
b)
- If there is an increase in the income of consumers
- Effective in the price of a related good for substitute
- If there is an increase in population
- Taste and preference
- If the quantity of the commodity goes up

23. (a) Rotational/ paddocking **(1mk)**
(b) - Reduces buildup of parasite and diseases
- allows pasture to grow before being grazed again
- Manure is evenly distributed in the field
- Excess pasture can be conserved
- Allows management practices on ungrazed portions e.g weed control, fertilizer application etc.
  Ensures maximum utilization of pasture **(4mks)**

24. (a) Witch weed/ striga weed **(1mk)**
(b)
- ✓ Maize
- ✓ Sorghum
- ✓ Sugarcane
- ✓ Napier grass
- ✓ Millet etc **(2mks)**

(c)
- ✓ Uprooting and destroying
- ✓ Planting resistance varieties
- ✓ Intercropping cereals and legumes
- ✓ Use of herbicides

SECTION C (40MKS)

25. a) Reasons for carrying out prunning
- ✓ To train the plant to achieve the required shape
- ✓ To remove the diseased and unwanted pasts of a plant such as extra suckers, leaves, branches, flowers or even stems.
- ✓ Control cropping to ensure uniform bearing in all seasons
- ✓ To facilitate picking by maintaining a convenient height
- ✓ To ease penetration of chemical spray by opening up of the bush
- ✓ To control pests and disease by removing bushy parts of a plant

5 x 1 = 5mks

b)- Buying and assembling
Acquiring goods from farmers and concentrating them at convenient point
- ✓ Transporting and distributing
  Ensures making the produce reach consumers

✓ Packing
Aims at protecting the produce against damage on its way to the market.
✓ Grading and standardization
Sorting the produce into different lots and establishing some uniformity in quality to increase customer satisfaction and makes marketing efficient
✓ Packaging
Aims at protecting the produce from physical deterioration, promote sales as it acts as an advertising medium
✓ Collecting market information medium
Collecting market information/ market research
Determine where and when to sell
✓ Processing
Enables produce to be changed from original state to a state in which it can be used.
✓ Storage

c)
✓ Picking starts 3-4 months after planting to maintain quality
✓ Picked flowers are put in woven baskets to avoid fermentation
✓ Wet flowers should not be picked because they beat up and ferment
✓ Do not compact picked flowers to avoid heating up and fermenting
✓ A suitable picking interval of 14 – 21 days is maintained to avoid harvesting overblown flowers.
✓ Break the flower stalk to maintain quality

26. (a) How soil lose fertility
✓ Leaching
✓ Soil erosion
✓ Mono cropping
✓ Continuous cropping
✓ Change in soil PH
✓ Burning vegetation cover
✓ Accumulation of salts

(b) spacing in crops
✓ Growth habit of the crop – spreading varieties require wider spacing
✓ Pests and diseases control
✓ Moisture availability
✓ Size of the plant – tall crop varieties require wide spacing
✓ Soil fertility
✓ Type of machinery to be used

27. a) Factors that determine quality of farm yard manure
✓ type of animal used
✓ type of food eaten
✓ type of litter used
✓ method of storage
✓ age of farm yard manure

b) (i)- Prepare land during dry season to kill all the weeds
- carry out primary cultivation
- carry out secondary cultivation to produce a medium tilth **(4mks)**
- Remove perennial weeds

iii) - plant at onset of rains
- spacing at 45-60 cm by 15-25cm
- plant 2 – 4 seeds per hole
- plant at a depth of 2.5 – 5.0cm **(4mks)**

(ii) - Rosecoco
- Mwitemania
- Canadian wonder

MERU CENTRAL
443/2
PAPER 2
MARKING SCHEME

1. - Merino sheep
- Dorper
- Black head Persian
- Red male sheep

2. - Strokes of an engine
- Induction
- Compression
- Power
- Exhaust

3. Methods of dehorning
- Use of caustic stick (potassium hydroxide
- Use of disbudding iron
- Use of dehorning saw of wire
- Use of rubber ring and elastrator.
- Use of dehorning collodion

4. - Through vectors
- Through ingestion of contaminated food and water/ through food and water
- Through contact
- Through inhalation of contaminated air/ through air

5. - Withstand resist high temperatures
- Can stay for long without food and water
- Can resist tropical diseases
- Can walk long distances in search of food and water

6. – painting to avoid rusting
- Lubricating moving parts
- Clean after use re-washing
- Replace worn out wheel
- Repair broken parts

7. Methods of selection in animal breeding
- Mass
- Progeny testing
- Contemporary comparison

8. Care should be taken to see that hay and other feeds are not contaminated by fieces
- Practicing rotational grazing and resting pastures to starve the large to death
- Improving sanitation in animal houses by assuming that the infected dung is removed before getting into contact with the animals
- All animals should be drained with appropriate antilremintics regularly
- Proper use of latrines by farm workers

9. - Status symbol
- Medium of exchange
- Social ceremonies
- Recreational purpose

10. – prevents nutrients deficiency diseases
- Ensures resistance against diseases

11. (a) Keep of rising moisture
- Control termites attack to the building

(b) - To check the size of the air space
- To check whether the yolk has blood spots

- Whether the shell has cracks
- Whether the egg shell is broken
- Whether the shell is very porous

12. - Clean the feet of the animal
- Control foot rot

13. – Bulky
- High fiber content
- Low nutrient content
- Low digestibility
- Mainly plant origin

14. Restlessness
- Mounting others and when mounting stands still
- A slight rise in body temperature
- In lactating cow's milk yield drops slightly
- Valva swells and becomes reddish
- Clear slimy mucus from the valva
- Bellowing or mooing frequently

15. – Open beak/panting
- Drooping wings
- Chicks makes a lot of noise
- Chicks move away from the heat source
- Drinking excess amount of water

16. Steaming up is the practice of providing extra feed of high nutritive value to an animal during the last weeks of gestation (1mk)
- Flushing is giving a high plane of nutrition to an animal around the service time (1mk)

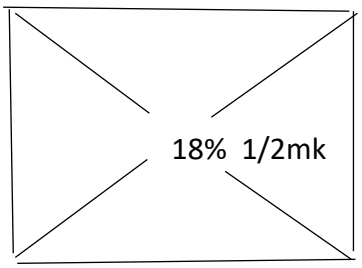
17. – human power
- Animal power
- Solar radiation
- Wind
- Water
- Biomas
- Electrical power
- Fossil fuel

18. (a) x – ovary (1mk)
Y – cervix (1mk)

b) - Produce ovum/female gametes (2mks)
- produce hormonal/ progesterone

c) Brucellosis/ contagious abortion (1mk)
- vibriosis

19.



Maize germ 7% (1/2mk)

16 parts of maize (1/2mk)

Sunflower 34% (1/2mk)

$\frac{11}{27}$ parts of sunflower

Amount of sunflower **(1mk)**

= $\frac{11}{27}$x 200kg = 81.48kgs

Amount of maize **(1mk)**

$\frac{11}{27}$ x 200kg = 118.52kgs

Total 5mks

20. a) B – Lactiferous dust **(2mks)**

C- gland cistern / milk cisterm/ lactiferous sinus

b) Process – milk synthesis/ lactogenesis **(1mk)**

Hormone – prolactin **(1mk)**

c) Protects the teat **(1mk)**

21. a) K – Beef tapeworm/ taenia saginata/ taenia ssp reject tapeworm **(1mk)**

C – Roundworm/ Ascoris Lumbricodes/Ascorris spp **(1mk)**

b) Bladder worm/ embryo

cyst/ cystococus **(1mk)**

c) Restrain the herfer in a crush

- Hold it by Nostrils and lift up its head.
- Release the drug into the mouth as far back as possible **(2mks)**

SECTION C (40MKS)

22. (a) Characteristic of beef cattle

- Blocky in shape
- Deep well fleshed body
- Grow fast
- Short strong legs
- Maintain good weight even during adverse conditions
- Efficient converters of food into meat and fat
- More resistance to diseases
- Good foragers

(b) Causes of cannibalism

- External parasites
- Overcrowding
- Bright light
- Prolapse
- Mineral deficiency
- Introduction of a new bird in a flock

(c)

DISC PLOUGH	MOULD PLOUGH
- Rides over obstacles	- cannot ride over obstacles
- Does not invert furrow slices completely	- inverts furrow slices completely
- More secondary operations are necessary	- fewer secondary operations are needed
- Cuts at varying depth	- cuts at uniform depth
- Not easily broken by obstacles	- Easily broken by obstacles
- Require less power to pull	- Requires more power to pull

23. (a) Essentials of clean milk production

- Healthy milking herd
- Healthy milking cows
- Healthy and clean milkman
- Clean milking utensils
- Avoid flarours in milk
- Milk filtration, cooling and storage

b) i) Uses of fences

- Mark boundaries
- Demarcate farm land

- Keep off wild animals
- Control livestock movement
- Control spread of diseases and parasites
- Isolate sick animals
- Provide security

(ii) Maintenance of farm tools
- Reduce replacement cost
- Increase durability
- Increase efficiency
- Avoid injury to the user

24. (a) Foot and Mouth disease

(i) Causal organism
Virus (1mk)

(ii) Species attacked
Cattle, pig, goat, sheep

(iii) Symptoms of attack
- Profuse salivation
- High fever
- Blisters that are painful around the mouth
- Diarrhea
- Complete loss of appetite
- Drop in milk production in lactating cows 4 x 1 = 4mks

Control measures
- Vaccination
- Quarantine
- Slaughter and dispose carcasses 3 x 1 = 3mks

b) Importance of keeping livestock healthy
- To grow fast
- Maximum production
- Are economical to keep
- To produce quality products
- To avoid spread of diseases to either animals or human beings **5 x 1 = 5mks**

c) Causes of bees swarming
- Shortage of water
- Outbreak of diseases and pests
- Dampness
- Sick or infertile queen
- Overcrowding
- Lack of ventilation
- Disturbance

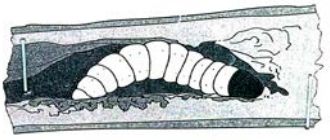
NYERI SUB-COUNTY EXAM.
PAPER 1
TIME: 2HOURS

SECTION A (30 MKS)
ANSWER ALL THE QUESTIONS ON THE SPACES PROVIDED.

1.) What is a farming system? ($^1/_2$mk)
2.) List three benefits of practicing mixed farming ($1^1/_2$mk)
3.) Give four impacts of high level of education on agricultural production (2mks)
4.) State two effects of low temperature on crop production (1mk)
5.) Give three reasons why land should be prepared early before the onset of rains ($1^1/_2$mks)
6.) Give three reasons for sub soiling ($1^1/_2$mk)
7.) State four methods of lowering the water table for better crop production (2mks)
8.) List four indicators of a fertile soil (2mks)
9.) Differentiate between organic matter and humus (1mk)
10.) Name three liming elements ($1^1/_2$mks)
11.) Justify why some farmers may prefer use of vegetative materials when planting (2mks)
12.) Name three forms of collective land tenure system ($1^1/_2$mks)
13.) Name four types of landslides (2mks)
14.) State three ways in which weeds can be classified according to their life cycle ($1^1/_2$mks)
15.) Define the following terms as used in pest control (2mks)
(i) Economic injury level
(ii) Integrated pest management
16.) State three precautions to take when harvesting cotton ($1^1/_2$mks)
17.) Differentiate stocking rate and carrying capacity (1mk)
18.) Name three types of silos used in preparation of silage ($1^1/_2$mks)
19.) State four effects of early defoliation of pastures (2mks)
20.) State two benefits of earthing up (1mk)
21.) What is crop rotation? (1mk)

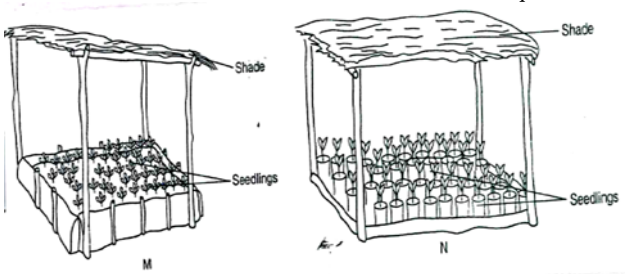
SECTION B (20MKS)
ANSWER ALL THE QUESTINS ON THE SPACES PROVIDED.

22.) The diagram below shows a maize stalk infected by a certain pest. Study it and answer the questions that follow.



(a) Identify the pest
(b) Give two damages caused by the above pest (2mks)
(c) Other than maize name two other crops attacked by the pest (2mks)
(d) Give two control measures for the pest (1mk)

23.) Study the nursery structures illustrated below and then answer the questions that follows

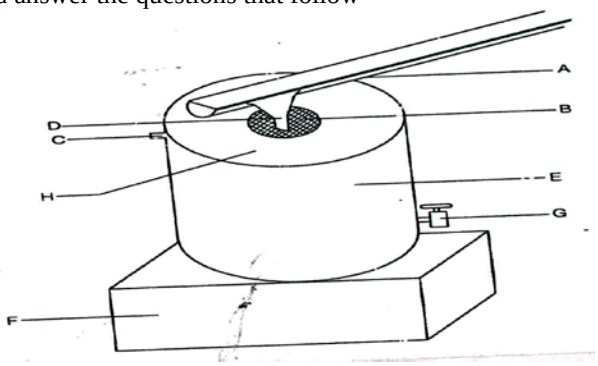


a.) Identify the types of nurseries illustrated by figure M and N (1mk)

b.) Give two advantages of using the types of nurseries illustrated by M (1mk)

c.) Give two advantages of using the type of nursery illustrated by N (1mk)
d.) State two management practiced/ done in the nursery during last two weeks before transporting the seedlings (2mks)

24.) The diagram below represents parts of a water harvesting structure.
Study it carefully and answer the questions that follow



(i.) Name the parts labelled A,B,C and D (2mks)
(ii.) Identify the method of water harvesting illustrated (1mk)
(iii.) State the use of part B (1mk)
(iv.) State two maintenance practices needed by part E (1mk)
(v.) A part from harvesting water using the method shown by the illustration name two other methods of water harvesting that can be used (1mk)

25.) Given that maize is planted at a spacing of (75x30)cm. Calculate the plant population in 2 hectares

SECTION C (40MKS)
ANSWER ANY TWO QUESTIONS IN THIS SECTION

26 a.) Describe five advantages of mixed grass legume pasture over pure grass pastures (5mks)
b.) Outline five advantages of using seeds for crop propagation (5mks)
c.) Give five disadvantages that a farmer may experience when using synthetic type of much
d.) Outline five roles of phosphorous in plants (5mks)

27 a.) State and explain five advantages of crop rotation (10mks)
b.) Explain five management practices in a vegetable nursery (5mks)
c.) State five uses of farm records (5mks)

28 a.) State and explain five factors which may influence the spacing of crops (10mks)
b.) State three advantages and three disadvantages of mechanical weed control (6mks)
c.) Describe the transplanting of tomatoes (4mks)

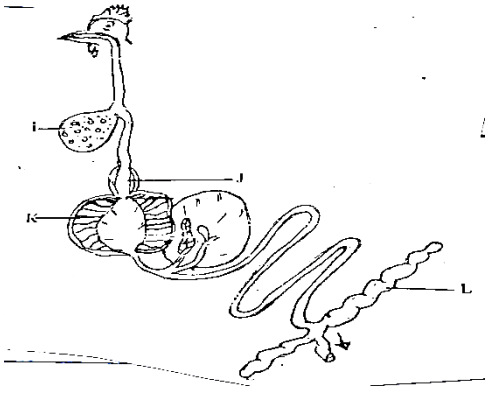
NYERI CENTRAL
PAPER 2
TIME 2 HOURS
SECTION A (30 MARKS)

ANSWER ALL QUESTIONS IN THIS SECTION

1. State two features that distinguish large white breed of pigs from the landrace.
2. Give four uses of solar power on the farm 2 mks
3. Give four reasons for proper maintenance of a knapsack sprayer. 2 mks
4. a) What is the causal organism of brucellosis. ½ mk
   b) Give four symptoms of brucellosis in cattle. 2mks
5. Name the tool used for tightening wire during fencing. ½ mk
6. Give two reasons for washing a cow's udder with warm water before milking. 1 mk
7. List the ingredients represented by the ratio 1:2: 3 in making concrete blocks 1 ½ mk
8. Name three farm operations that can be done by use of animal power. 1 ½ mks
9. Give four conditions that reduce the quality of eggs for incubation. 2 mks
10. Name two types of lubricants that can be used in a tractor. 1 mk
11. Name four maintenance practices of water cooling system in a tractor. 4 mks
12. a) Give two methods that are used to prevent anaemia in piglet. 1 mk
    b) Give two reasons for weighing piglet immediately after farrowing and weaning.1 mk
13. Name the major components of the power transmission system in a tractor. 2 mks
14. Give four reasons that make indigenous breed of cattle able to survive in arid areas. 2 mks
15. State two factors affecting the draught (pull) of the mould board plough. 1 mk
16. Name the set of appropriate handling equipment a farmer would use to restrain a large bull when taking it round the show parade. ½ mark
17. State two importance of bees in livestock production. 1 mk
18. State two reasons why drenching alone is not an effective method of controlling parasites in livestock. 1 mk
19. Give three advantages of concrete as building materials. 1 ½ mk

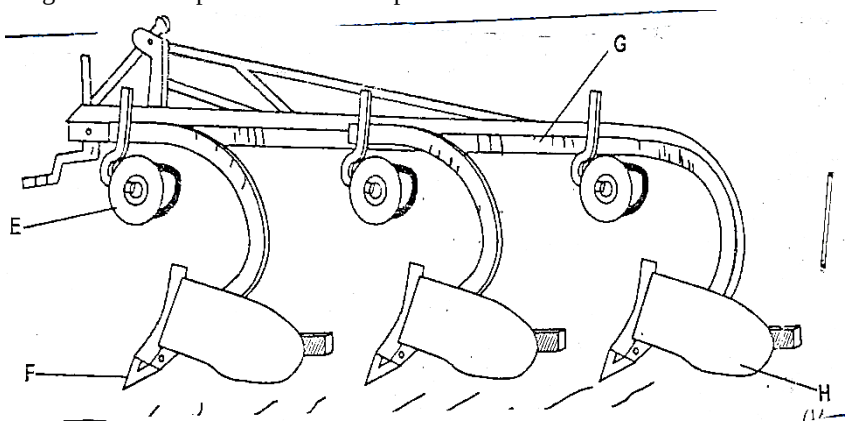
SECTION B (20 MARKS)
ANSWER ALL THE QUESTIONS IN THIS SECTION.

20. The diagram below represents the digestive system of a farm animal. Study it carefully then answer the questions that follow,



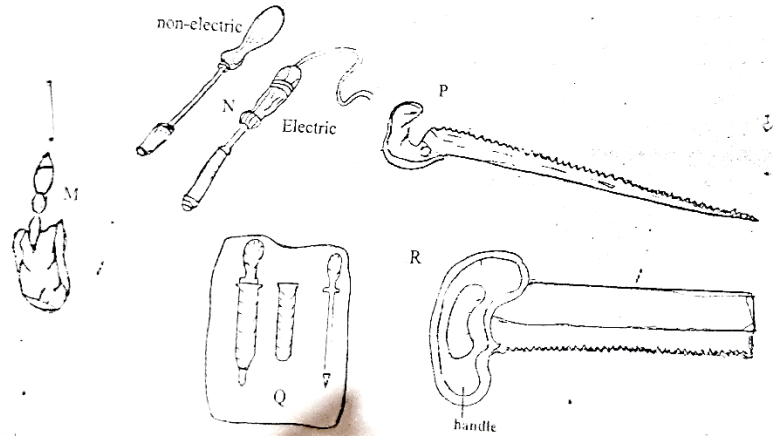
(a) Name the parts labelled I,J,K,L 2 mks
b) State the functions of the part labelled J,K 2 mks
c) Name the major type of digestion in the part labelled L 1 mk

21. The diagram below represents a farm implement



a) Identify the implement ½ mk
b) Name the parts labelled E,F,G,H 2 mks
c) Give the functions of the part labelled F,H (1 mk)
d) Give the maintenance practices of the above implement 1 ½ mk

22. The diagram below represents different types of tools and equipment found in the farm. Study them carefully then answer the questions that follow.



Identify and state the function of M,N,P,Q,R

23 a) Outline the procedure for contracting a piglet 4 marks
b) State two reasons for castrating piglets. 1 mk

SECTION C (40 MARKS0

ANSWER ANY TWO QUESTIONS FROM THIS SECTION

24 a) Outline five general characteristics of beef cattle. 5 mks
b) Explain five requirements of clean milk production 5 mks
c) Explain five predisposing factors of mastitis in dairy cattle. 10 mks

25 a) Describe five factors considered when siting a rabbit hutch. 5 mks
b) Outline five factors considered when selecting the construction materials.
c) Explain four reasons for treating timber 4 mks
d) Outline six requirements of a calf pen 6 mks

26 a) Describe the life cycle of a three host tick 8 mks
b) Explain eight general measures used to control livestock diseases on the farm. 8 marks
c) Outline four limitations of dead fences in the farm. 4 mks.

NYERI CENTRAL
AGRICULTURE
PAPER 1
MARKING SCHEME

SECTION A

1. A Farming system: is the organization of the farm and all the enterprises in relation to each other.
2. Three benefits of practicing mixed farming.
   i) There is mutual benefit between crops and livestock.
   ii) It acts as an insurance against total less by the farmer.
   iii) There is maximum utilization of resources
3. Effects of high level of education on agricultural production.
   i) Proper method and time of doing things such as planting at the proper time and spacing
   ii) Use of the right type and amounts of inputs
   iii) Applying the inputs at the right place
   iv) Making right decisions based on proper observation eg observing signs of disease and applying the right treatment.
4. Effects of low temperature on crop production
   i) Slow growth rate of crops as the process of photosynthesis is slowed.
   ii) High incidences of disease infection to crops such as Elgon die back.
   iii) Quality of crops such as tea and pyrethrum improves with the lowering of temperature

(5). Three reasons why land should be prepared early before the onset of rains.
   i) To kill weeds
   ii) To incorporate manure and other organic matter into the soil
   iii) To destroy different stages of crop pests such as eggs, Laura by burying them, exposing them to the heat of the sun
   iv) To aerate the soil

6 Reasons for sub soiling
   i) To break hand pans
   ii) To facilitate adequate gaseous exchange
   iii) To bring to surface minerals which might have leached to the deeper layers
   iv) For better root penetration (1^1/2mks)

7. Methods of lowering the water table for better crop production.
   i) Open ditches
   ii) Underground drain pipes
   iii) French drains
   iv) Cambered beds
   v) Pumping
   vi) Planting trees
8. Indicate of a fertile soil.
   i) Good depth
   ii) Proper drainage
   iii) Good water holding capacity
   iv) Adequate nutrient supply
   v) Correct soil ph.
   vi) Free from excessive infestation of soil borne pests and diseases.(2mks)
9. Difference between organic matter and humus
   Organic matter is the dead and decaying plant and animal remains while humus is the end product of decomposition of plants and animal remains (1x1=1)
10 Three liming elements
   (i) Calcium
   (ii) Magnesium
   (iii) Sulphur
11. To justify why some farmers may prefer the use of vegetative materials.

i)Crops from vegetative materials mature faster than those from seeds
ii) Crops show uniformity in qualities like disease resistance, seed size colour etc.
iii)It is easier and faster especially where seeds show prolonged dormancy
iv)Facilitates propagation of crops that are seeds that are not viable or having long dormancy
v)Resulting plant has desirable shape and size for ease of harvesting and spraying ($4x\frac{1}{2}=2$)

12) Three forms of collective land tenure system
i) Communal land tenure system.
ii) Cooperative land tenure system
iii) State ownership of land

13. Types of landslides
i)slump/slip
ii)Debris slide/earth slide /soil slip
iii)Debris fall
iv)Rock slides

14 Classification of weeds according to their life cycle.
i)Annual weeds
ii)Biennial weeds
iii) Perennial weeds($x3=1\frac{1}{2}$mks)

15 Definition of terms
i)economic injury level -Situation where pest population causes damage beyond tolerance and control measures showed be taken before thus point is reached
ii)Integrated pest management
use of a combination of pest control methods is chemical, cultural physical and biological

16 Precautions to take when harvesting cotton.
i) Sisal bags should not be used because their fibers mix with the seed cotton making the ginning difficult.
ii) Care should be taken to ensure that no foreign materials and small twigs are mixed with the seed cotton.
iii)Picking should not be done when the cotton is w($\frac{1}{2}x3=1\frac{1}{2}$mks)

17 Difference between stocking rate and carrying capacity
Carrying capacity is the ability of forage stand to maintain a particular number of livestock units per unit area while stocking rate is the number of animals maintained per unit area of land (1mk)

18 Types of silos
i)Trench silo
ii)Clamp silo
iii)Bunker howler silo

19 Effects of early defoliation of pastures
i)The foliage has very high moisture content of about 90%
ii)it has very high protein content on weight basis
iii)Has very low crude protein yield
iv)Has high dry matter digestibility but low digestible nutrients
v)Frequent early defoliation leads to a gradual weakening of the stand, followed by empty patches and week invasion

20 Benefits of earthing up.
i) Promotes seed production in groundnuts
ii) Prevents lodging eg in maize
iii) Improves tuber formation in Irish
iv) Improves drainage around the plant eg in tobacco

21 Crop rotation I the growing of crops of different families on the same piece of land in an orderly sequence (1mk)

SECTION B

22 A.) PEST –stalk borer /maize stalk borer

B.) damage caused by the pest

- It makes holes on maize cobs and stems
- It lowers the quality of maize grains
- It lowers the yields (2x1=2mks)

C.) Other crops attacked

- Sorghum
- Sugarcane
- Millet 2x1/2=1mk)

d.) Control measures

- Destruction/burning of the previous season crop residues/practicing field hygiene
- Practicing closed season
- Practicing crop rotation
- Using appropriate insectsides to kill the pest
- Through rogueing
- Carrying out timely planting
- Through intercropping or planting maize with a crop that deters the pest e.g. onion or Napier grass

23 a.) Type of nurseries illustrated

M-bare-root nursery/direct

N-containerized nursery/polythene sleeves nursery (1/2x2=1mk)

b.) Advantages of using nursery M

- cheaper to establish
- less labourious
- takes less space (2x1/2=1mk)

c.) Advantages of nursery N

- Requires less water
- Higher survival rate after transplanting /no root damage
- Produce seedling with well-formed roots (2x1/2=1mk)

d.) Two management practices done

i.) Hardening off

ii) Root trimming (2x1=2mks)

24 (i parts labelled

a.) Cutter

b.) Filter (sieve)

c.) Overflow pipe

d.) Funnel (1/2x4=2mks)

ii.) Method of harvesting –roof catchment (1mk)

iii.) Use of part B

- To remove sediments and solid dirt (1mk)

iv.) Maintenance practices on part C

- Painting
- Repair if leaking (2x1/2=1mk)

v.) Other water harvesting methods:

- Weirs
- Rock catchment
- Wells
- Ponds (2x1/2=1mk)

25.) Plant population =area of the land /spacing (1mk)

2(100x100) m area of the land

Pp =2(10000x10000) cm^2/ (75x30) cm^2 (1mk)

(200000000) cm^2/ (75x30) cm^2
=88,889 plants (2mks)

SECTION C

26 A.) Advantages of mixed grass-legume over pure grass pasture

- It is palatable
- Mixed pasture yields more per unit area
- It is more nutritious
- Makes maximum use of soil nutrients
- Helps to reduce soil erosion because of good coverage
- Has better weed control
- Increase soil fertility because of nitrogen fixation
- There is economic use of fertilizer (5x1=5mks)

b.) Advantages of using seeds in crop propagation

- Seeds are easy to store (not bury)
- Seeds are easy to treat against soil borne pests and diseases
- Seeds are easy to handle
- Manure and fertilisers can be mixed with seeds during planting
- Seeds can be stored for a long time
- It's possible to develop a new crop variety due to cross pollination 5x1=5mks)

c.) Disadvantages of synthetic much

- Prevents water infiltration
- Raising of soil temperature
- No modifying of soil PH
- They don't add nutrients to the soil
- Require skills to use (5x1=5mks)

d.) Roles of phosphorous in plants

- Root development
- Development of flowers/flowering
- Fruit and seed formation
- Hastens ripening of fruits
- Plays role in metabolic processes eg respiration
- Takes plant in cell division and crop growth
- Strengthens plant stems (5x1=5mks)

27 a.) Advantages of crop rotation

- Improves soil fertility-when legume crops are included
- Control pests/diseases-it disrupts cycle of weeds that are specific to certain crops
- Better use of soil nutrients-different crops draw nutrients from varying soil horizons therefore when alternated leads to better nutrients utilization
- Control soil erosion –when a cover crop is included it reduces soil erosion
- Improves soil structure –grass ley roots binds soil particles together and organic matter accumulates in the soil during the grass ley period (2x5=10mks)

b.) Five management practices in a vegetable nursery

- Watering to give moisture
- Steading to prevent excess heat
- Plucking out to reduce congestion
- Rogueing to control diseases
- Spraying with appropriate pesticides to control pests
- Spraying fungicides to control fungal disease
- Hardening off (5x1=5mks)

c.) Uses of farm records

- Used to gauge whether the farmer is making profit or loss
- Helps in planning and budgeting
- Proper records can be used to obtain loan from financial institution
- Used to claim compensation in case of damage/loss
- Helps to determine the debtors and creditors
- So as not to overtax or under tax (5x1=5mks)

28 a.) Factors which may influence the spacing of crops (10mks)

- Soil fertility –fertile soil requires cross spacing while its wider in poor soils
- Size of the plant – tall plants varieties requires wider spacing than short varieties
- Moisture content-areas with adequate moisture , spacing can be narrow
- Mechanization –mechanized farm requires wider spacing to allow movement of machines
- Growth habit- crops that spread require a wider spacing while those that do not spread requires narrow spacing (5x2=10mks)

b.) Advantages of mechanical weed control

- Its relatively cheap especially when hand tools are used
- Enhances water infiltration
- Earthing up to encourage root growth in cover crops is possible during tillage operations
- Crop residue is incorporated into the soil hence increasing the nutrients status of the soil
- Pests are controlled by exposing them to predators and sun-scorching (1x3=3mks)

c.) Disadvantages

- Laborious and expensive in large farms
- Exposes soil to erosion
- Encourages loss of water by evaporation
- Causes root disturbances for crops in the fields
- May cause conducive environment for seeds growth

c.) Transplanting of tomatoes

- Water the nursery bed before lifting the seedlings
- Ensure that the seedlings are lifted with a lamp of soil around the roots
- Select only the healthy and vigorously growing seedlings
- Plant one seedling per hole
- Firm the soil around the base of the seedling
- Mulch
- Water (4x1=4mks)

NYERI CENTAL
PAPER 2
MARKING SCHEME
SECTION A (30 MARKS)

1. Two features that distinguish large white from landlock.
- Large white has erect ears while landrace has drooping ears.
- Large white has dished face while landrace has straight face.
2. Four uses of solar power on the farm.
- Drying farm produce
- Heating water.
- Cooking
- Generating electricity.
3. Four reasons for proper maintenance of a knapsack sprayer.
- Reduce cost of repair / replacement.
- Improve efficiency
- Prolong life of the knapsack sprayer.
- Reduce injuries / accident incidents.
- Avoid damage to the tool
4. (a) Casual organism of brucellosis
- Bacteria / Brucella abortus/ Brucella SPP.

b) Four symptoms of brucellosis in cattle.
- Spontaneous absorption / premature birth
- Retained placenta occurs.
- Cow May become barren while the bull have low libido and inflamed testis.
- Yellow, brown, slimy, odorless discharge from the vulva may occur.
5. Tool for tightening wire during fencing wire strainer / monkey strainer
6. Two reasons for washing a cow's udder
- To stimulate milk let down
- Remove dirt
7. Ingredients in the ratio 1:2:3
   1.Cement
   2. Sand
   3. gravel/ coarse/ ballast.
8. Three farm operations done by animal power
- Ploughing
- Harrowing
- Transportation 3x ½ mk= 1 ½ mk
9. Four conditions that reduce the quality of eggs for incubation
- Dirt
- Undersize/oversize/over weight
- Abnormal shape
- Broken / cracked/ soft shelled/ rough shell.
- Internal abnormalities – double yoked, meat, blood spots.
- Long storage/ poor storage.
10. Two types of lubricants used in a tractor.
- Grease
- Oil
11. Four maintenance practices of water- cooling system in a tractor.
- Fan belt tension should be checked regularly and adjusted accordingly.
- Water pump should be lubricated regularly.
- All pipes should be fitted tightly to avoid leakage.

- Clean water should be used in the radiator.
- Radiator should be filled with clean water before starting day's work
- Trash should be removed from the ring.

12. (a) Two methods to prevent anaemia in piglets.
- Carry out iron injection
- Give iron paste

(b) Two reasons for weighing piglets
- For selection purpose i.e for breeding. Culling for sale
- Know the weight gains/ food conversion growth rate.
- Determine the sow's mothering ability
- determine level of management of the sow during gestation period.

13. Major components of power transmission system.
- Clutch
- Gearbox
- Propeller shaft
- Differential

14. Reasons that make indigenous breeds of cattle survive in arid areas on scanty pastures poor quality pastures)
- Are resistant to tick borne diseases.
- Resistant to high temperature.
- Can walk for long distances in search of pastures and water without affecting performance.
- Have humps for storing fats. Fats are oxidized to energy and water.

15. Two factors affecting pull of the mouldboard.
- Condition of the land / obstacles.
- Topography
- Depth of penetration
- Soil type
- Weather condition

16. Bullring and lead stick
17. Two importance of bees in livestock production
- Source of honey
- Source of wax
- Act as pollinators

18. Reasons why drenching alone is not an effective method of controlling parasites.
- Drenching does not destroy intermediate host.
- Drenching doe not destroy other stages of parasites in the pasture.

19. Advantages of concrete as building materials.
- Durable
- Resistant to weather effects
- Easy to clean
- Resist pest damage.

SECTION B

20 (a) I – Crop K – Gizzard
J – proventriculus L - Caecum

b) Function of
J – Produce enzyme /Pepsin
K – Crush and grind food into paste

c) Major type of digestion in part L microbial digestion.

2 (a) Mouldboard plough =

b) E – Disc coulter
F - Share

G – Beam
H – Mouldboard.

c) Functions:
F – Cut the furrow slices horizontally
H _ Invert the furrow slice completely

d) The maintenance practices.
- The moving parts of the plough should be lubricated.
- Shares should be kept tight and sharp/
- All nuts and bolts should be checked regularly and is loose tightened.
- All trash and wet soil should be scraped clean.
- All unpainted parts should be coated with old engine oil during storage.
- Worn out parts should be replaced.

22. Identify and function of tools and equipment

LETTER	IDENTITY	FUNCTION
M	Garden trowel	Lifting seedlings from nursery
N	Dehorning iron	Used for dehorning
P	Key hole saw	Cutting holes on wood.
Q	Trocar and cannula	Used to pierce the rumen of a ruminant suffering from bloat
R	Backsaw / tenon saw	Used for fine sawing and small work cutting e.g. making joints.

23(a) Procedure for castrating a piglet.
- Clean and disinfect the scrotal area.
- Squeeze each testicle within the scrotum.
- Use a sterilized scapel or razor blade to make a vertical incision on the scrotum
- Separate the testicles from the spermatic cord by scrapping the spermatic cord with a scapel or a razor blade.
- Repeat the same procedure to remove the other testicle.
- Disinfect the wound.
- Apply healing oil / tar to the wound.

b) Reason for castration
- To control breeding diseases e.g. brucellosis, virginities, trichomoniasis
- For faster growth rate.
- To control breeding
- To increase quality of the meat by removing unpleasant smell especially in goats.

SECTION C

24 (a) General characteristics of beef cattle.
- Are blocky in shape; They appear square or rectangular with compact body.
- Have deep well fleshed body
- Grow fast leading to early maturity.
- Are efficient converters of food into meat and fat.
- Are able to maintain good weight even during adverse conditions such as drought
- Are good foragers i.e there is red used selective grazing.
- Are more tolerant to high temperatures.
- Breed regularly.
- More resistant to diseases,
- Have strong short legs to support their heavy weight.

b) Requirements of clean milk production
- Cows with mastitis should be milked last and milk disposed off.
- Milking equipment should be clean.
- Feeds that can taint milk should be avoided.

- Clip the hair around the flanks and udder.
- Milk should be immediately cooled after milking to reduce bacterial multiplication.
- Udder should be cleaned before milking.
- The cow should be tested for mastitis before milking.

c) Predisposing factors of mastitis in dairy cattle.
- Stage of lactation: animals are likely to suffer from mastitis at the beginning and at the end off lactation.
- Incomplete milking: When milk is left in the teat canal, it acts as culture media for bacteria.
- Udder attachment: Animal with large pendulous or loosely hanging under and long teat are more susceptible to mastitis infection because the udder is liable to mechanical injuries.
- Mechanical injuries: Wound on the teats or udder allow entry of micro-organisms into the udder.
- Poor sanitation: This increases multiplication of the bacteria causing mastitis.
- Poor milking technique: This may result in mechanical injury of teats and weakening of the sphincter muscles of the teat.

25 (a) Factors to consider when siting a rabbit hutch
- Site should be safe and secure in or near the homestead.
- Should be sited in accessible place.
- The place should be sheltered from strong prevailing winds.
- The area should be well drained.
- It should be located on the leeward side of the farm house to avoid bad smell.
- Space should be large enough to allow future expansion.

b) Factors to consider when selecting the construction materials.
- The material should be suitable in relation to weather conditions.
- Should be durable.
- The material should be strong.
- The material should be available.
- Cost of the materials should be affordable.
- Woncability of the material: available tools should be able to work out the material.

c) Reasons for treating timber
- Prevent warping
- Prevent rotting due to weather.
- Prevent fungal attack
- Prevent damage from insects.

d) Requirements of a calf pen
- Good ventilation
- Leak proof/should be dry
- Raised floor.
- Should be spacious
- Vermin Proof.
- Easy to clean.
- Should be draught free.

26. Life cycle of a three host tick
- Eggs are laid on the ground and hatch into a larva.
- larva climb onto first host.
- Larva feeds on first host and engorges.
- Engorged larva drops to the grounds and moults into nymph
- Nymph climbs onto second host suck blood and become engorged.
- Nymph drops and moult into adult.
- Adult climbs onto third host.
- Adult feeds and mate on the third host.
- Engorged female drops to the ground and lay eggs.

b) General measures of disease control.

- Drenching / deworming to control internal parasites e.g. tapeworms.
- Treatment of sick animals to prevent spread of disease.
- Vaccination to create resistance to diseases on regular basis e.g. food.
- Control vectors – To avoid disease transmission e.g. C.C.T.
- Use of prophylactic measures to avoid infections e,g, dry cow therapy to control mastitis.
- Proper feeding balanced rations to prevent nutritional disorder.
- proper breeding to control breeding diseases.
- Quarantine – restriction of movement of animal's of a highly contagious infections.
- Use of disinfectants in animal dwellings to kill pathogens.
- Isolation of sick animals from healthy ones to avoid spread of diseases.
- cleanliness of house/ general. Hygiene to destroy pathogen

c) Limitations of dead fences

- Expensive to construct and maintain.
- Need continuous care and maintenance to last longer.
- Some may inflict injury to animals e.g. barbed wire.
- Electric fence can cause death to animals.

SABATIA SUB COUNTY CLUSTER
443/1
AGRICULTURE
PAPER 1
(THEORY)

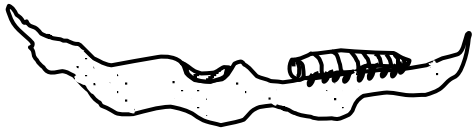
1. State **FOUR** which ways through which HIV/AIDS affect agricultural production. (2mks)
2. State **FOUR** conditions under which shifting cultivation is favourable. (2mks)
3. State **FOUR** conditions under which seeds are planted at a high seed rate. (2mks)
4. State **THREE** ways in which trees are harvested ($1^1/_2$mks)
5. Give **THREE** causes of blossom end rot in tomatoes. ($1^1/_2$mks)
6. Under what **TWO** conditions does opportunity cost not exist? (lmk)
7. Give **FOUR** qualities of good silage . (2mks)
8. Outline **FOUR** types of production functions. (2mks)
9. Give **THREE** reasons why bulbils make good planting materials than suckers. (1½mks)
10. Give **THREE** reasons why agriculture is defined as a science. ($1^1/_2$mks)
11. Give **FOUR** characteristics of a good root stock for budding. (2mks)
12. State **FOUR** farming practices which help to control soil erosion. (2mks)
13. Give **FOUR** effects of top dressing on a pasture. (2mks)
14. What are the reason for:

a) Inoculating legume seeds before planting. (1½mks)
b) Topping in pastures
c) Pinching out in tomatoes

15. State **two** collective land tenure systems. (2mks)
16. Give **four** books of accounts used by a farmer. (2mks)
17. Give **three** poisonous weeds to livestock (1½ mks)

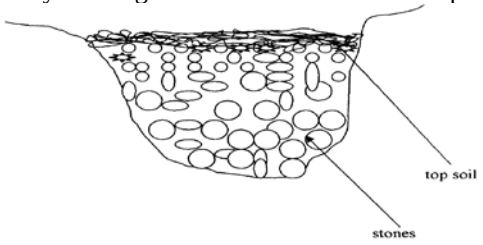
SECTION B

18. Study the pest below and answer the questions below.



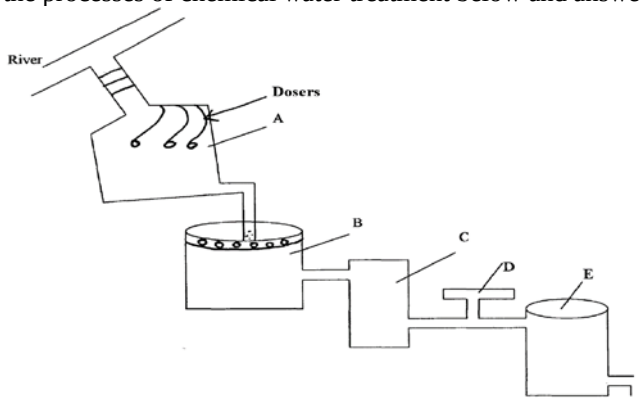
(a) Identify the pest (1 mark)
(b) State two methods of controlling the pest. (2 marks)
(c) Name the crops attacked by the pest. (2 marks)

19. Study the diagram below then answer the questions that follow:



(a) Identify the method of drainage above. (1mk)
(b) State other **three** methods used to drain swampy areas. (3mks)
(c) Give **four** importance of drainage. (4mks)

20. Study the processes of chemical water treatment below and answer the questions that follow:



(a) Identify the parts labeled: A,B,C,D (2mks)
(b) State **two** chemical substances added at part labeled B and give their functions. (2mks)
(c) State **three** uses of water in crop production. (3 mks)

SECTION C (40MKS)

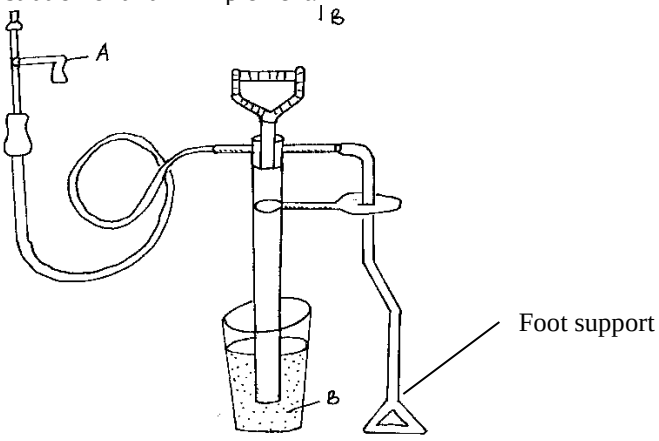
21. (a) Describe the cultural methods of weed control in crop production. (l0mks)
(b) Describe the FIVE ways a maize farmer can adjust to risks and uncertainty in her farm (10mks)
22. a) Discuss the human factors which influence agriculture. (10 marks)
b) Explain **five** factors to consider when choosing the planting time. (10 marks)
23. Describe the production of carrots under the following sub headings
a) Seedbed preparation (3 marks)
b) Harvesting (4 marks)
c) Explain five methods of harvesting water on the farm (10 marks)
d) Outline three roles of sulphur in crop production. (3 marks)

SABATIA CLUSTER
443/2
PAPER 2
2 HOURS
SECTION A (30MKS)

1. State three reasons for swarming in bees. (1½ mks)
2. List six activities carried out in a crush. (3mks)
3. Name two hormones that control milk let down in a dairy cow. (1 mk)
4. State three reasons for hoof- trimming. (1½ mks)
5. State four microbial activities that take place in the rumen. (2mks)
6. Differentiate between the terms tupping and crutching as used in sheep management. (2mks)
   a) Tupping
   b) Crutching
7. State the cause of grass tetany in livestock. (½ mks)
8. Name four farm implements that are operated by hydraulic system of a tractor. (2mks)
9. State three ways in which a farmer would minimize loss of farm tools on the farm. (2mks)
10. A farmer intends to dehorn his herd of cattle. Name three farm tools he is likely to use. (1 ½ mks)
11. Name the equipment that a farmer may use for mechanical control of bloat from his Herd of cattle. (½ mks)
12. What do you understand by the following terms? (1 mks)
(a) Capon
(b) Steer
13. Name two species of tapeworms common in livestock. (1 mk)
14. State two signs of parturition in cattle. (1 mks
15. State two disadvantages of wind power. (1mk)
16. State two uses of solar power. (1mk)
17. State two physical characteristics of Berkshire breed of pig. (1 mk)
18. State two ways in which temperature can be regulated in an incubator (1mk)
19. Why should pigs be first washed with warm soapy water before spraying them with an acarides? (½ mk)
20. Define the term ration as used in livestock nutrition. (½ mk)
21. Name an intermediate host of liver fluke. (½ mk)
22. Give two reasons for seasoning timber before use in construction. (1mk)
23. State four pre- disposing factors of scours. (2mks)
24. Differentiate between out crossing and cross- breeding. (1mk)

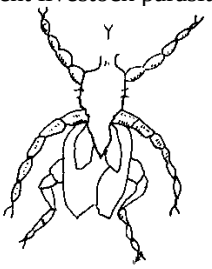
SECTION B (20MKS)

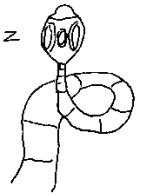
25. Below is an illustration of a farm implement.



a) Identify the above implement. (1mk)
b) Name the above labeled A and B. (2mks)
c) State the functions of parts A and B. (2mks)

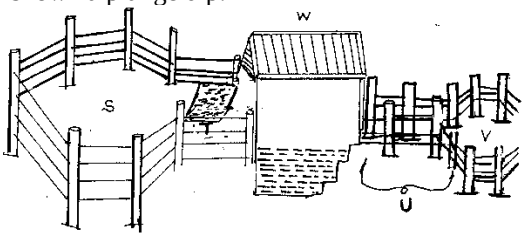
26. State how an Ox-cart should be maintained for efficient operation. (5mks)
27. The diagrams below represent livestock parasites.





a) Identify parasite Y and Z 1mk)
b) In which organ in livestock is parasite Z found. (1mk)
c) State the control measures of parasite Y. (3mks)

28. The diagram below shown a plunge dip.



a) Name the parts labeled Sand U. (2mks)

b) state two precautions a farmer should undertake on a dip wash to ensure effective dipping. (2mks)

c) state one function of the part labeled W. (1mk)

SECTION C (40MKS)

Answer any two questions in this section in the answer sheet provided.

29. a) State FOUR operational differences between a disc and a mould board plough. (4mks)
b) Describe the four stroke cycle of a petrol engine. (16 mks)

30. a) Discus briefly the importance of fences on the farm. (10mks)
b) Describe the procedure followed when establishing the foundation of a permanent house (10 mks)

31. a) State FOUR symptoms of mastitis in a dairy cow. (4mks)
b) Explain the general control measures of livestock diseases. (16mks)

SABATIA CLUSTER
443/1
AGRICULTURE
PAPER 1
(THEORY)

1. State FOUR which ways through which HIV/AIDS affect agricultural production. (2marks)
- Shortage of labour
- Time is wasted looking for medication
- Money meant for farming is used to buy drugs
- Direct loss when the farmer and farm workers die
- Lack of motivation if the farmer is infected

2. State FOUR conditions under which shifting cultivation is favourable. (2marks)
- Land is abundant/large
- Population is sparse
- Number of livestock per unit area is low
- Land is communally owned
- Simple tools are used

3. State FOUR conditions under which seeds are planted at a high seed rate. (2marks)
- Small seeded varieties
- Impure seeds
- Low seed germination percentage
- Close spacing
- Two or more seeds per hole
- If crop is grown for fodder

4. State THREE ways in which trees are harvested ($1^1/_2$marks)
- Pollarding
- Lopping
- Pruning
- Thinning
- Coppicing

5. Give THREE causes of blossom end rot in tomatoes. ($1^1/_2$marks)
- Too much nitrogen in early stages of growth
- Irregular or infrequent watering
- Calcium deficiency in young fruits

6. Under what TWO conditions does opportunity cost not exist? (l mark)
- No alternatives
- Resources are free
- Resources are given as a gift

7. Give FOUR qualities of good silage . (2marks)
- Be of high quality forage cut at proper stage of growth
- Have a Ph of 4.2 or below
- Have 5-9% lactic acid
- Free from moulds and bad odour as ammonia and butyric acid
- Greenish to yellow not brown or black
- Fine texture with no sliminess

8. Outline FOUR types of production functions. (2marks)
- Decreasing returns
- Increasing returns
- Constant returns
- Diminishing returns

9. vigorous growing
- easy to establish roots
- Not bulky

10. Give THREE reasons why agriculture is defined as a science. ($1^1/_2$marks)
- Crop pathology
- Entomology
- Agricultural engineering
- Soil science
- Genetics

11. Give FOUR characteristics of a good root stock for budding. (2marks)
- Compatible
- Disease resistant
- Good rooting medium
- Vigorously growing

12. State FOUR farming practices which help to control soil erosion. (2marks)
- Afforestation/reafforestation
- Agroforestry
- Grassed/vegetated waterways
- Strip cropping
- Crop rotation/intercropping/use of manures and fertilisers
- Mulching
- Contour farming
- Cover cropping
- Grass strips

13. Give FOUR effects of top dressing on a pasture. (2marks)
- Add nutrients and ensure nutrient balance
- Increase herbage yield
- Improve nutritive value of the crop
- Correct the physical and chemical properties of soil
- Enable the soil organisms to break down organic residues into available nutrients

14. What are the reason for:

a) Inoculating legume seeds before planting. (1½marks)
Promote growth of root nodules.

b) Topping in pastures
To stimulate growth of new pasture.

c) Pinching out in tomatoes
To remove terminal buds to control the height of crops

15. State two collective land tenure systems. (2marks)
- Communal
- Cooperative
- State ownership

16. Give four books of accounts used by a farmer. (2marks)
- Ledger book
- Inventory
- Journal
- Cash book

17. Give three poisonous weeds to livestock (1½ marks)
- Thorn apple (Datura stramonium)
- Sodom apple
- Subukia weed
- Mallow
- Flower of the hour
- Abutilon

SECTION B

18. Study the pest below and answer the questions below.

(a) Identify the pest (1 mark)

- Boll worm

(b) State two methods of controlling the pest. (2 marks)

- Crop rotation
- Field hygiene
- Spraying using appropriate pesticides

c. Name the crops attacked by the pest. (2 marks)

- Beans

Tomatoes

19. Study the diagram below then answer the questions that follow:

(a) Identify the method of drainage above. (1mark)

- French drains

(b) State other three methods used to drain swampy areas. (3marks)

- Cumbered beds
- Planting eucalyptus trees
- Open ditches
- Pumping

(c) Give four importance of drainage. (4marks)

To increase soil aeration

- To increase soil volume around the roots
- To raise soil temperature
- To increase microbial activities
- To reduce soil erosion
- To reduce toxic substances

20. Study the processes of chemical water treatment below and answer the questions that follow:

a) Identify the parts labeled: (2mks)

A Mixing chamber (softening tank)
B Sedimentation or Coagulation tank
C Filtration tank
D Chlorinater

(b) State two chemical substances added at part labeled B and give their functions. (2marks)

- Soda ash
- Alum

(c) State three uses of water in crop production. (3 marks)

- Domestic use e.g. washing utensils ,cooking
- Watering livestock
- Diluting chemicals
- Processing farm produce
- Construction of farm buildings irrigating crops during dry season

SECTION C (40MKS)

21.(a) Describe the cultural methods of weed control in crop production. (l0marks)

- Mulching -smoothers weeds
- Cover cropping -smoothers weeds
- Crop rotation -some weeds like striga are associated with certain crops
- Timely planting -allows crops to establish before weeds
- Proper spacing-creates little space for weeds to grow
- Clean seedbed -starts of the crop on clean seedbed so that they effectively compete with weeds
- Flooding -controls all non-aquatic weeds in rice fields
- Use of clean planting materials to prevent introduction of weed seeds to the farm

b) How to adjust to risks and uncertainties

- Diversification

- contracting
- Insurance
- Selecting more certain enterprises
- Input rationing
- Adapting modern methods of farmint

22a) Discuss the human factors which influence agriculture. (10 marks)

- Level of technology and education- farmers may not know when, how and what to plant if they lack knowledge and education
- Health -poor health will lead to low production
- Economy-the number of economic activities will affect agriculture ie collapse of factories
- Government policy-laws that have been set by the government may influence agricultural production
- Transport and communication-poor transport and communication affects agriculture negatively
- Cultural practice and religious beliefs-bad practices and beliefs may affect agriculture negatively
- Marketing forces -supply and demand of a commodity may affect agriculture

22 b) Explain five factors to consider when choosing the planting time. (5 marks)

- Rainfall pattern /moisture content of the soil
- Type of crop planted
- Soil type
- Market demand
- Prevalence of pests and diseases
- Weed control

(b) Explain five qualities of a good green manuring plant (5marks)

- Fast growing
- Highly vegetative /leafy
- Quick to rot
- Hardy
- Leguminous/nitrogen fixing

22. Describe the production of carrots under the following sub headings

a) Seedbed preparation (3 marks)

- Clear the land using a slasher
- Dig the seedbed up to 20cm depth
- Break the soil clods to a fine tilth
- Manure should not be added

b) Harvesting (4 marks)

- They are ready after 5 months
- They are harvested by uprooting
- A forked jembe can be used to lift the carrots
- They ate sold fresh or canned

c) Explain five methods of harvesting water on the farm. (10 marks)

- Weirs -they are barriers made across a river to raise the water level and still allowing the water to flow
- Dams -barrier constructed to store water
- Ponds -used for rearing fish and drinking water for livestock
- Roof catchment -trapping and storage of water
- Wells-sunk into the ground to make water seep in for use
- Rock catchment-walls constructed around the rock with a tap to collect rain water

d) Outline three roles of sulphur in crop production. (3 marks)

- Formation of protein and plant hormones
- Formation and activation of certain coenzymes
- Influences physiological processes like protein synthesis, chlorophyll formation ,carbohydrate metabolism and nitrogen fixationD

SABATIA CLUSTER
443/2
PAPER 2
MARKING SCHEME

SECTION A (30MARKS)

1. Three reasons for swarming in bees **(1 ½ mks)**

- Shortage of food;
- Shortage of water;
- Poor ventilation;
- Dampness;
- Bad smell;
- Overcrowding;
- Sick queen;
- Outbreak of parasites and diseases;
- Damage to brood and combs;
- Direct sunlight in the hive; ***Award 3x ½ =1 ½ marks.***

2. Activities carried out on a crush.

- Milking
- Identification of livestock
- Vaccination
- Pregnancy test / diagnosis.
- Taking body temperature
- Artificial insemination
- Dehorning
- Treating sick animals
- Spraying livestock against external parasites
- Administrator of prophylactic drugs ***6x ½ =3marks.***

3.
- Oxytocyn
- Adrenalin. ***2x ½ =1marks***

4.
- Control foot rot disease
- For balanced movements of the animal.
- Prevent ram from injuring the ewe during tupping
- Interferes with smooth mating especially of hind quarters if infected.

5.
- Fermentation of food.
- Synthesis of vitamin B complex.
- Synthesis of amino from ammonia
- Breakdown of proteins into peptides, amino acids and ammonia.
- Breakdown of Carbohydrates and cellulose to carbon dioxide , volatile fatty acid

6. (a) Tupping - Removal of wool around the anus, vulva and udder in preparation for lawbing.
(b) Crutching- Removal of dung massed wool around the anus and vulva in preparation for mating.

7. - Deficiency / low level of magnesium in animal blood plasma.

8.
- Mowers
- Ploughs
- Boom sprayers
- Self tipping trailers.
- Chaff cutters
- Manure / fertilizer sprayers. ***(4x ½)=2mks***

9.
- Proper recording in the inventory
- Having an individual responsible for tools.
- Have a rack to facilitate quick checking
- Keep an issue book where tools are signed for.
- Keeping them under key and lock when not in use.

10. - Dehorning iron
- Use of rubber ring and elastrator.
- Dehorning saw

11. - Trocar and canular.
- sharp knife

12. **(a)** **Capon –** Male bird which has been rendered sterile / castrated male bird or chicken.
(b) **Steer-** Castrated male cattle.

13. - *Taenia saginata*.
- *Taenia solium.*

14. - Enlarged vulva
- Enlarged udder
- Restlessness
- Milk dropping from the teats. 2 x ½ = 1mark.

15. - Unreliable / unpredictable.
- Initial cost for installation of windmill is expensive.
- Variable strength 2x ½ =1mk

16. - Drying cereal grains.
- Lighting
- Heating water.
- Used as energy for photosynthesis

17 - Blackcoat
- White feet, face fail switch 2 x½ =(1mk)

18. - Open ventilation to allow in fresh air when temperature drops below normal.
- Adjust the source of heat accordingly. 2 x½ =(1mk)

19. - Done to remove all exudates from their skins which could otherwise reduce the effectiveness of the acaricide. (½ mk)

20. - Is the daily amount of feed given to animals within a period of 24hours (1x1=1mk)

21 - Snail (½ mk)

22. - Make them last longer (2 x ½ mk)

23 - Poor sanitation
- Feeding calf at irregular intervals
- Lack of colostrums.
- Over feeding (4x ½ =2mks)

24. **Out crossing** – Mating of distantly related animals of the same breed.
Cross- breeding – Mating of animals of different breeds.

SRCTION B

25. **(a)** Stir-up pump (1x1=1mk)
(b) A-trigger (1x1=1mk)
B-acaricide solution . (1x1=1mk)
(c) Part A – Pressed to allow solution out of the barrel through the nozzle.(1x1=1mk)
B- Used to kill the parasite being sprayed. (1x1=1mk)

26 - Check and adjust the tyre pressure.
- Grease the moving part (rej. Movable parts)
- Tighten lose nuts and bolts.
- Clean implement after use (rej. Washing)
- Keep implement in a shed (rej. Shade)
- Repair or replace broken parts. (5x1=5mks)

27. **(a)** -Y- tsetse fly / *Glossinna spp*.
-Z- Tapeworm / *monezia expausa/ Taenia spp*.
(b) Small intestines / ileum / intestines
(c) -Bush clearing to destroy breeding places.
-Traping and killing tsetse flies (rej. Traping alone)
- Sterile male therapy.

- Spray bushes with insecticides. (1x4=max 3)

28. (a) -S- holding yard / collecting yard/ assembling yard
U- draining race. (2x1=2mks)

(b) -Check concentration of the acaricide
-Maintain solution at top level. (2x1=2mks)

(c) -Reduce evaporation of water in the dip wash .
-Prevent dilution of dip wash with rain water. (2x1=2mks)

29. OPERATIONAL DIFFENCES BETWEEN DISC AND MOULDBORD PLOUGH.

- Used in field with obstacles like stones, trees stumps, and roots because of the rolling action of the discs. - Does not invert furrow slices completely. - It leaves a rough field. - More secondary operations are required to refine the bed. - Cuts at varying depth. - Not easily broken since it rides over obstacles. - Less power repaired to pull the plough. - Works well in sticky and hard soils	- Cannot be used in field with obstacles since it is rigid and does not slide over obstacle - Inverts furrow slices completely. - Leaves level / clean field. - Few secondary operations required. - Cuts at uniform depth. - Easily broken since it is rigid. - More power is required to pull the plough. - Doesn't work well an sticky and hard soils

b) (i) Induction stroke.
- Pistons moves down the cylinder
- Inlet value opens
- Drawing in fresh supply of petrol vapour and air
- Fuel and air mixing into the cylinder. (4x1=4marks)

(ii) Compression stroke
- Inlet value closed
- Piston moves up the cylinder.
- Compressing fresh air – fuel mixture into the combustion chamber (4x1=4mks)

(iii) Power stroke.
- Fresh fuel-air mixture is fully compressed .
- A spark's produced at spark plug
- Fuel mixture ignites giving pressure.
- Piston moves down the cylinder. (4x1=4marks)

(iv) Exhaust value
- Piston moves up the cylinder.
- Burned fuel – air mixture is eliminated
- Exhaust gas limes out through open exhaust values. (4x1=4marks)

30 (a) Mark boundary of the farm.
- Provide security.
- Facilitate rotational grazing by paddocking the field.
- Live fences serve as windbreakers.
- Protect crops from damage by animals in mixed farming.
- Control spread of parasites and diseases
- Live fences make environment appear beautiful
- cut materials can be used to provide firewood/charcoal
- Provide forage
- cut materials can be used as mulch.
- some are edible as they have fruits.
- Control soil erosion. (10x1=10mks)

b) - Clear the site.
- Take the dimension of the structure.
- Fix the pegs the measured ground.

- Dig the trench as per the recommended measurements.
- Put the hard core at the base.
- Firm the hard core
- Put the concrete
- Build using the building units up to the ground level.
- Layout the damp prove course.
- It will now be ready for wall construction. (10x1=10marks)

31. (a) Milk contains pus, blood, thick clots or turns watery
- Death of the infected quarter may result.
- When the udder and teats are swollen, animal rejects suckling or milking and kicks due to pain.
- Milk has a salty taste and there are fine clots or flakes particularly the fore milk.

(b) Use of prophylactic drugs.
- Proper sanitation and use of antiseptics in premises and cleaning.
- Practice quarantine
- Slaughter and well dispose off/burn/bury the carcase.
- Carry out routine vaccination of livestock
- Control diseases vectors.
- Carry out proper feeding of livestock.
- Practice proper milking techniques to avoid mastitis.
- Avoid breeding diseases by use of A.I.
- Practice proper housing to avoid overcrowding.
- Treat infected animals to reduce chances of diseases spreading
- Avoid physical injuries to animals caused by sharp objects
- Practice rotational grazing to control internal parasites.
- Prevention of stress factors.
- Isolate of sick animals from the rest of the herd.
- Carrying out fencing of the farm to keep away storage animals from the farm.

SUPERIOR JET
443/1
AGRICULTURE
PAPER 1

SECTION A (30 MARKS)

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

1. State **four** factors that influence the quality of farm yard manure. (2mks)
2. Name **two** types of labour records. (1mk)
3. State **four** factors that determine the depth of cultivation. (2mks)
4. Name **four** aspects of rainfall that affect agriculture. (2mks)
5. State **two** factors that determines national income. (2mks)
6. Give **two** example of fixed costs in maize production (1mk)
7. State **four** causes of land fragmentation. (2mks)
8. What is meant by the term production function? (1mk)
9. State **four** reasons why agriculture is important to Kenya's economy. (2mks)
10. Give **four** characteristics of shifting cultivation. (2mks)
11. State **four** ways in which trees improve soil productivity. (2mks)
12. Name **two** varieties of sorghum grown in Kenya. (1mk)
13. State **four** ways in which crop pests are classified. (2mks)
14. Name the form of soil water that is available to crops. (1mk)
15. Give **four** reasons why burning of land is discouraged. (2mks)
16. State **four** minimum tillage practices. (2mks)
17. State **four** characteristics of good trees for agroforestry. (2mks)
18. What is integrated pest management? (1mk)

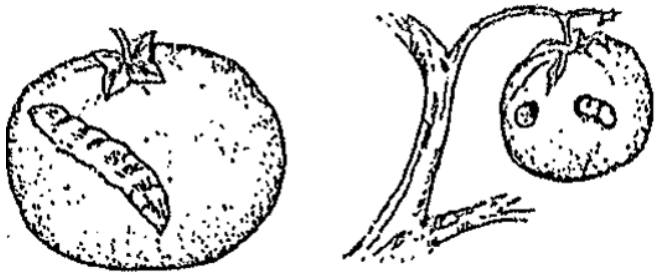
SECTION B 20 MARKS

Answer ALL questions in this section

19. The diagram below shows a weed

a) Identify the weed. (1mk)
b) Using features on the diagram, give **two** reasons why it is difficult you eradicate above weed.
c) State **two** ways in which the weed is economically important. (2mks)

20. The diagram below illustrated a tomato fruit infected by a filed pest.

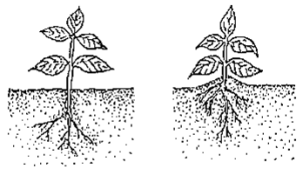


a) Identify the pest. (1mk)
b) State **two** ways in which the pest is economically important. (2mks)
c) State **two** cultural ways of controlling the pest. (2mks)

21. A farmer applied a compound fertilizer 10:20:0 on a three hectare piece of land at a rate of 180kg N per hectare.

a) Calculate the quantity of the compound fertilizer the farmer applied on the piece of land
b) What to the figures 10and 20 stand for in the compound fertilizer. (2mks)

22. The diagram below shows an illustration of a crop field practices.



a) Identify the filed practice illustrated above. (2mks)
b) Name **two** crops which require the practice illustrated. (2mks)
c) Give **two** reasons for carrying out the practice on one of the crop you have named in (b) above. (2mks)

SECTION C 40 MARKS

Answer ANY TWO questions in this section

23. a) State **seven** role of a farm manager. (7mks)
b) Give **three** characteristics of plant used as green manure. (3mks)
c) The farm manager of Kilimo farm made the following purchases on31st December 2023.

- Seed and fertilizers 2,500
- Fuel 5,000
- Disk plough 80,000
- Poultry feeds 4,500
- Cattle drugs 2,000

During the year the farm sold maize to Njoro girls for ksh. 20,000, milk processor for sh. 40,000, Kilimo farm also expected sh. 8,000 from a prominent neighboring farms for ploughing the land. The opening valuation was sh.50,000 and closing valuation sh, 80,000 using the information provided above, prepare profit and loss account for Kilimo farm. (10mks)

24. a) State and explain any **five** risks and uncertainties in crop farming. (10mks)
b) Explain **five** factors considered in choosing seed rate. (5mks)
c) Explain **five** importance of drainage as a land reclamation method. (5mks)

25. a) Describe any **five** methods used in water harvesting. (10mks)
b) Describe any **five** ways in which biotic factors influence agriculture production.

THE SUPERIOR JET
443/1
PAPER 1

SECTION A (**30 MARKS)**

1. State four factors that influence the quality of farm yard manure. (2mks)

i) Type of animal used
ii) Type of food eaten
iii) Type of litter used
iv) Method of storage
v) Age of farmyard manure **(Mark any 4×½=2)**

2. Name two types of labour records. (1mk)

i) Muster roll
ii) Labour utilization analysis **(Mark any 2×½=1)**

3. State four factors that determine the depth of cultivation. (2mks)

i) Type of crop to be planted
ii) Implements available
iii) Type of the soil
iv) Availability moisture/level of soil moisture content
v) Condition of the land
vi) Presence of hardpans **(Mark any 4×½=2)**

4. Name four aspects of rainfall that affect agriculture. (2mks)

i) Rainfall reliability
ii) Amount of rainfall
iii) Rainfall distribution
iv) Rainfall intensity **(Mark any 4×½=2)**

5. State two factors that determines national income. (2mks)

i) Gross domestic product
ii) Gross national product
iii) Per capita income **(Mark any 4×½=2)**

6. Give two example of fixed costs in maize production (1mk)

i) Depreciation of farm machinery
ii) Salaries of permanent
iii) Buildings
iv) Fuel
v) Rent **(Mark any 2×½=1)**

7. State four causes of land fragmentation. (2mks)

i) Shifting cultivation
ii) Traditional system
iii) Population pressure on a limited area of land
iv) Accumulation of land holdings
v) Rationally land may be offered to settle debts **(Mark any 4×½=2)**

8. What is meant by the term production function? (1mk)

i) Physical relationship between inputs and outputs

9. State four reasons why agriculture is important to Kenya's economy. (2mks)

i) Source of food/supply food
ii) Source of employment
iii) Source of raw materials for industries
iv) Provision of foreign exchange
v) Provision of market for industrial goods
vi) Source of capital or money **(Mark any 4×½=2)**

10. Give four characteristics of shifting cultivation. (2mks)

i) Where land is abundant
ii) Population is sparse

iii) Number of livestock per unit are is low
iv) Land is communally owned. **(4×½=2)**

11. State four ways in which trees improve soil productivity. (2mks)

i) Roots of trees bind soil particles together controlling soil erosion
ii) Reduce surface run off controlling soil erosion
iii) Leave decay supplying humus to the soil
iv) Provide shade and reduce moisture through evaporation
v) Protect the soil from rain drop erosion **(Mark any 4×½=2)**

12. Name two varieties of sorghum grown in Kenya. (1mk)

i) Dobbs
ii) Seven **(2×½=1)**

13. State four ways in which crop pests are classified. (2mks)

i) Their mode of feeding
ii) Crop attacked
iii) Stage of development of pest
iv) Scientific classifications
v) Level of damage
vi) Place **(mark any 4×½)**

14. Name the form of soil water that is available to crops. (1mk)

- Capillary

15. Give four reasons why burning of land is discouraged. (2mks)

i) Destroy organic matter
ii) Destroy microorganisms/ living organism
iii) Soil is exposed to agents soil erosion
iv) Makes soil infertile
v) Leads to unavailability of some nutrients **(Mark any 4×½)**

16. State four minimum tillage practices. (2mks)

i) Application of herbicides
ii) Use of mulch
iii) Timing cultivation
iv) Restricting cover crop
v) Uprooting or slashing **(Mark any 4×½)**

17. State **four** characteristics of good trees for agroforestry. (2mks)

i) Fast growth
ii) Deep rooted
iii) Nitrogen fixing
iv) Good in by- product production **(Mark any 4×½)**

18. **What is integrated pest management? (1mk)**

i) Combination of both chemical and cultural pests control method.

SECTION B 20 MARKS

Answer ALL questions in this section

19. The diagram below shows a weed

a) Identify the weed. (1mk)

- Nut grass/sedge/cyperus rotundus

b) Using features on the diagram, give two reasons why it is difficult you eradicate above weed.

i) Has underground nut for future propagation.
ii) Produce many sees lie flowery part **(Mark any 2×½=1)**

c) State two ways in which the weed is economically important. (2mks)

i) Used as livestock feed
ii) It is costly to control
iii) Lower quality and quantity of crop yields **(Mark any 2×½=1)**

20. The diagram below illustrated a tomato fruit infected by a filed pest.

a) Identify the pest. (1mk)

- American ballworm

b) State two ways in which the pest is economically important. (2mks)

i) It is costly while controlling

ii) Lower the quality and quantity of the tomatoes

c) State two cultural ways of controlling the pest. (2mks)

i) Crop rotation

ii) Early planting

iii) Close season

21. A farmer applied a compound fertilizer 10:20:0 on a three hectare piece of land at a rate of 180kg N per hectare.

a) Calculate the quantity of the compound fertilizer the farmer applied on the piece of land

If 1 ha → 180kg √**1**

3ha → $^{3}/_{1}$ × 180 √**1**

=540kg/ha √**1**

b) What to the figures 10and 20 stand for in the compound fertilizer. (2mks)

10 - Nitrogen content

20 - Phosphorus pentoxite

22. The diagram below shows an illustration of a crop field practices.

a) Identify the filed practice illustrated above. (2mks)

- Earthing up

b) Name two crops which require the practice illustrated. (2mks)

i) Irish potatoes

ii) Sweet potatoes

iii) Tobacco

iv) Maize

c) Give two reasons for carrying out the practice on one of the crop you have named in (b) above.

i) In groundnuts it promotes production of seeds

ii) Irish and sweet potatoes improves tuber formation

iii) In tobacco improves drainage

iv) In maize it provides support to prevent lodging

<u>SECTION C 40 marks</u>

Answer any two questions in this section

23. a) **State seven role of a farm manager. (7mks)**

i) Implementing farm decisions and taking responsibility

ii) Keeping farm records up to date and using them in day to day running the farm

iii) Detecting weakness and constraints and finding ways and means of overcoming them.

iv) Comparing the stands of ones enterprises with the set standards

v) Collects the information related to the enterprises

vi) Makes the decisions which are linked to future plans operations

vii) Making quick decision especially when here is agent operation $7\times \mathbf{1} = 7\boldsymbol{mks}$

b) **Give three characteristics of plant used as green manure. (3mks)**

i) Should be highly vegetative or leafy

ii) Should have a fast growth rate

iii) Plants must be capable of rotting quickly

iv) Plants should be hardy

c)

24. a) State and explain five risks and uncertainties in crop farming. (10mks)

i) Fluactuation of commodity prices

- The farmer may not predict the future market prices

ii) Physical yield uncertainty

- The farmer does not know how much to expect

iii) **Ownership uncertainty**

- The farmer may lose part or whole of the produce through they, fire, death etc.

iv) Outbreak of pest and diseases

- It affects the expected outcome

v) Sickness and injury uncertainty

- A farmer or employee or family member affected loses the ability to work

vi) New production technique and uncertainty

- Farmer may not be certain as to whether technology is as effective as the previous one.

vii) Obsolescence

- Floods, droughts, earthquakes, storm and strong winds may destroy the crops or kill the animals.

viii) Natural catastrophies

- Floods, drought, earthquake, storm and strong winds may destroy the crops or kill the animals.

b) **Explain five factors considered in choosing seed rate. (5mks)**

i) **Seed purity-** less seeds are required when planting pure seeds, more seeds are required when planting impure seeds

ii) **Germination percentage**- less seeds is used when its germination is higher. More seeds are required when its germination is lower.

iii) **Spacing** – closer spacing more seeds are used than at wider spacing.

iv) **Number of seed per hole**- when two or more seeds are planted per hole, higher seed rate is required than when one seed is planted per hole.

v) **The purpose of the crop**- crops used as silage are spaces closed and requires more seeds.

c) **Explain five importance of drainage as a land reclamation method. (5mks)**

i) To increase soil aeration around the root zones

ii) To increase soil volume around the root zones

iii) To raise soil temperature for better plant growth

iv) To remove toxic substances that are toxic to plants. **(Mark any 5×1=10)**

25. **a) Describe five methods used in water harvesting. (10mks)**

i) Weirs- are constructed across the river to raise the water level and still allow water to flow over it.

ii) Dams- are constructed across the river or dry valley to collect and hold water.

iii) Ponds- natural means of harvesting and storing water for domestic use

iv) Roof catchment- traps and store rain water

v) Use of wells- built to supply ground water for domestic use

vi) Rock catchment- harvest rain water from big rock

vii) Micro catchment- harvesting water through bananas or citrus trees and crops.

b) Describe five ways in which biotic factors influence agriculture production.(10mks)

i) Pests

i) They lower crop yields through eating the produce. They also transmit crop diseases

ii) They also transmit crop diseases

ii) Parasites

- They lower yields through sucking of sap
- They transmit crop diseases

iii) Decomposers

- They help in the decomposition of organic matter which increases he soil fertility

iv) Pathogens

- They reduce the quality of the produce or even lead to total failure of the crops
- They increase the cost of production.

v) Pollinators

- They cause crops pollination which helps in the production of new and improves varieties of crops

vi) Nitrogen fixing bacteria

- They are micro- organisms which improves soil fertility by fixing free nitrogen into nitrates the form which nitrogen is utilized by plants

vii) Predators

They are animals that kill and feed on other animals. Thy feed on pest reducing pest population.

CEKENAS
443/1
AGRICULTURE
PAPER 1
TIME: 2 HOURS

SECTION A(30marks)

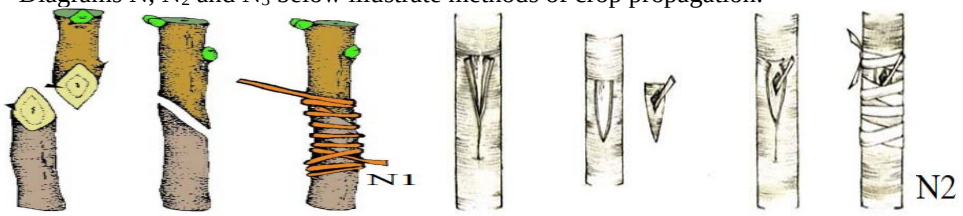
1. List any **three** climatic factors that influence crop production. (1½marks)
2. State **four** ways by which nutrients may be lost from the soil. (2marks)
3. Sate **three** ways by which a farmer can make efficient use of a pasture crop. (1½marks)
4. State **four** reasons why timely weed control is advisable in crop production. (2marks)
5. State **four** ways by which a grass cover helps to conserve soil. (2marks)
6. List **two** features of plastic pipes a farmer should consider before buying pipes. (1mark)
7. Name **two** types of water pumps which can be used on a farm. (1mark)
8. Give **two** factors that influence spacing when planting a pure stand of beans. (1mark)
9. Name **two** factors that would help a farmer decide the time of planting cabbages. (1mark)
10. State **four** factors that affect the effectiveness of a pesticide. (2marks)
11. State **two** roles of good soil aeration in crop growth. (1mark)
12. Give a solution to avoid loss due to each of the following properties of nitrogenous fertilizer when applying to crops.

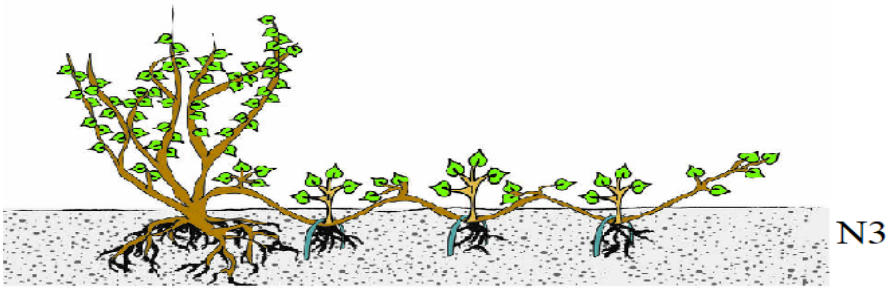
a) Hygroscopic. (½mark)
b) Easily leached. (½mark)

13. Differentiate between **close season** and **trap cropping** as used in crop pest control. (2marks)
14. Give **three** benefits of using hybrids and composites in maize production. (1½marks)
15. Highlight **four** factors that determine the number of time secondary cultivation is done.(2marks)
16. Outline **four** characteristics of plants used in preparation of green manure. (2marks)
17. Name **two** types of labour records. (1mark)
18. What are the causes of Blossom end rot disease in tomatoes. (1½marks)
19. State **four** roles of organic matter in sandy soils. (2marks)
20. Give **two** reasons why soil testing is carried out in crop production. (1marks)

SECTION B (20marks)

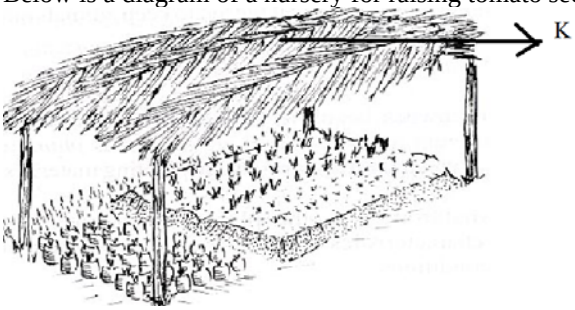
21. Diagrams N, N_2 and N_3 below illustrate methods of crop propagation.





a) Name the methods of propagation illustrated in the diagrams. (1½marks)
b) Why is it necessary to tie as illustrated in N_2? (½mark)

22. Below is a diagram of a nursery for raising tomato seedlings.



a) State **two** advantages of having the part labelled K. (2marks)

b) State any **four** management practices that should be carried out in the nursery from the time the seedlings emerge to the time of transplanting. (2marks)

23. a) What is opportunity cost? (1mark)

b) A farmer has a piece of land on which he can produce maize and barley.
The yields and the seedling prices of the crops are as shown below.

Crop	Yield (90ks bags)	Selling price Ksh/bags
Maize	2500	800
Barley	2000	1500

The farmer decides to produce maize. Assuming the cost of producing any of the crops is the same.

i) Calculate the farmer's opportunity cost. Show your working. (2marks)

ii) Which crop should the farmer grow? (1mark)

c) Give **two** circumstances under which opportunity cost is zero. (2marks)

24. Different soil samples were tested and their pH values tabulated as shown below.

Soil Sample	pH values
G1	4
G2	5
G3	6
G4	7
G5	8
G6	9
G7	10
G8	11

a) Which soil sample had the greatest acidity? (½mark)

b) Which soil is suitable for growing carrots? (½mark)

c) How would the pH value of soil sample G8 be reduced? (1matk)

d) How would the pH value of soil sample G1 be raised? (1mark)

25. The diagram below illustrates an example of an arable weed. Study the diagram carefully and answer the questions that follow.

a) Identify the weed illustrated above. (1mark)

b) State **two** harmful effects of the above on the farm. (2marks)
c) State **two** ways in which the weed has competitive advantage over crops in the field. (2marks)

SECTION C(40marks)

Answer **any two** questions in this section.

26. a) Differentiate between topping and top dressing. (2marks)
    b) Describe the procedure followed when preparing silage in an already constructed trench silo using maize growing in the field. (8marks)
    c) Explain **ten** cultural methods of controlling crop pests in the field. (10marks)
27. a) State any **four** problems associated with nomadic pastoralism in Kenya. (4marks)
    b) Outline **six** advantages of rotational grazing in pasture utilization. (6marks)
    c) Explain **five** ways in which a farmer benefits by keeping farm records. (10marks)
28. a) Outline **five** effects of mass wasting. (5marks)
    b) Explain **seven** ways that can be used to harvest water in a farm. (7marks)
    c) Explain the **role** of crop rotation in crop production. (8marks)

CEKENAS
443/2
PAPER 2
TIME: 2 HOURS

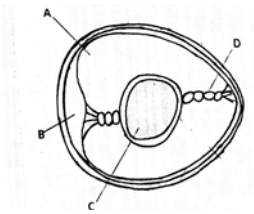
SECTION A (30 MARKS)

1. State **four** roles of worker bees in a bee colony. (2marks)
2. Name a tool used for; (1mark)
a) Tightening barbed wire
b) Digging and collecting manure
3. List **four** routes through which pathogens can enter the body of an animal. (2marks)
4. What is the name given, where by hind legs come out first during parturition. (½mark)
5. Give **four** reasons of maintaining farm tools. (2marks)
6. Name a breed of pig which has the following characteristics.
i) Black body with a white patch on the shoulders and the fore legs. (½mark)
ii) White body with blue spots. (½mark)
7. Mention **two** tools used for cutting mature horns in cattle. (1mark)
8. Name the other combination of a tool used together with the following. (2marks)
a) Canula
b) Brace
c) Elastrator
d) Wood chisel
9. Give **four** factors that would affect digestibility of food in livestock. (2marks)
10. State **two** reasons why a wire loop hanging in Kenya Top Bar Hive (KTBH) is recommended to be smeared with grease. (1mark)
11. State **four** reasons for castration in pig production. (2marks)
12. Distinguish between the following practices in livestock production.
a) Crutching and ringing in sheep production. (1mark)
b) Cropping and harvesting in fish farming. (1mark)
13. Name **three** aspects to examine in the dung to determine ill health in livestock. (1½marks)
14. List **four** structures that are necessary in handling dairy animals. (2marks)
15. Name the causal agents in livestock diseases. (2marks)
i) Anaplasmosis
ii) Anthrax
iii) Swine fever
iv) East coast fever
16. State **three** cultural uses of livestock. (1½marks)
17. Name the intermediate host of the following endoparasites. (1mark)
a) *Fasciola hepatica*
b) *Taenia saginata*
18. Give **three** signs of heat in rabbit. (1½marks)
19. What is dry cow therapy. (1mark)
20. Name **two** examples of notifiable disease in livestock. (1mark)

SECTION B

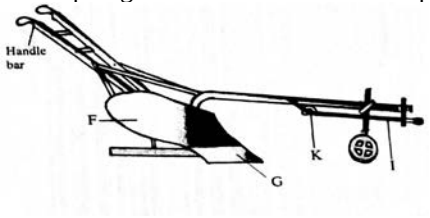
Answer all the questions in this section.

21. The diagram below is an illustration of an egg. Study it carefully and answer the questions that follow.

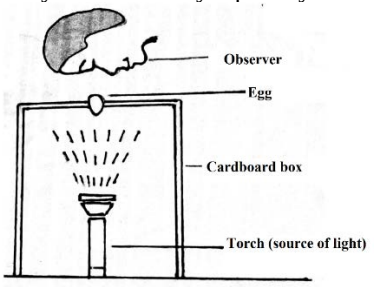


a) Name the parts labelled. A,B,C,D (2marks)

b) State three qualities that should be considered when selecting eggs for incubation. (3marks)
c) What is the function of the part labelled C in a fertilized egg. (1mark)
22.a) Define the term digestible crude protein(DCP). (1mark)
b) A farmer wanted to prepare 200kg of calf rearing ration containing 20% DCP using the pearson's square method, calculate the amount of maize containing 10% DCP and sunflower containing 35% DCP the farmer would need to prepare the ration. (5marks)
23. Study the diagram below of an ox-plough and use it to answer the questions that follow.



a) Give the functions of the parts labelled. G,F (2marks)
b) Name the part labelled. K.I (2marks)
c) Mark on the diagram using letter M and N the two parts used to adjust the depth of ploughing. (1mark)
24. Below is an illustration of an activity carried out by a poultry farmer keeping layers.



a) Identify the practice. (1mark)
b) Give two abnormalities that can be observed using the above illustrated practice. (2marks)

SECTION C

Answer any two questions in this section

25, a) Describe **ten** short term tractor servicing. (10marks)
b) Explain **five** maintenance practices that should be carried out in an ox-cart. (5marks)
c) Explain **five** factors that a farmer should consider when sitting an apiary. (5marks)
26. a) Describe the essentials of clean milk production in dairy farming. (10marks)
b) Outline the disease predisposing factors in livestock. (5marks)
c) State **five** control measures for fowl typhoid. (5marks)
27. a) Explain the importance of a hedge in a farm. (10marks)
b) Give the differences between a petrol and a diesel engine. (5marks)
c) Explain the importance of steaming up in dairy cattle. (5marks)

CEKENAS
PAPER ONE
443/1
MARKING SCHEME
SECTION A

1. List any three climatic factors that influence crop production. (1½marks)

- Temperature
- Humidity
- Rainfall
- Wind
- Light

2. State four ways by which nutrients may be lost from the soil. (2marks)

- Leaching
- Volatilization
- Burning
- Denitrification
- Soil erosion
- Uptake by weeds/ plants

3. Sate three ways by which a farmer can make efficient use of a pasture crop. (1½marks)

- Rotational grazing/controlled grazing
- Conserve excess pasture crop/ hay making/ silage making
- Use of proper stocking
- Timely harvesting / grazing at the right time
- Graze different species/ classes of animals according to need
- Zero grazing/ stall feeding

4. State four reasons why timely weed control is advisable in crop production. (2marks)

- Avoid injury to farmers
- Avoid contamination of crops with weed seeds e.g. wild oats, datura
- Minimise spread of crop pests and diseases which some weeds act as alternate hosts
- Reduce multiplication and spread of weed seeds in crop fields
- Reduce production costs of the crop
- Prevent weeds from establishing in the crop fields
- Prevent allelopathic effect of weeds on the crop
- Reduce competition for light, water, nutrients between crops and weeds

5. State four ways by which a grass cover helps to conserve soil. (2marks)

- Grass cover reduces rain drops effects which reduces soil erosion
- Grass cover reduces speed of runoff which lowers the erosive power of run-off
- Grass cover protects soil surface hence reducing wind erosion
- Grass roots holds soil particles together from being carried away by erosive agents
- Grass cover reduces the speed of surface runoff thereby
- Organic matter from the grass improves soil structure, which will improve rate of water infiltration, hence reducing erosive power of run-off

6. List two features of plastic pipes a farmer should consider before buying pipes. (1mark)

- Quality of material used for making the pipes/durability/resistance to the sun
- Weight
- Free from rodent damage
- Size of pipe i.e. diameter/length
- Working pressure of the pipe/ thickness of the walls of the pipes/density of the pipes/strength of pipe

7. Name two types of water pumps which can be used on a farm. (1mark)

- Hydram pump

- Semi rotary pump
- Centrifugal
- Piston / Reciprocating pump

8. Give two factors that influence spacing when planting a pure stand of beans. (1mark)

- Variety of beans/growth habit of beans
- Soil fertility
- Moisture content of the soil
- Number of seeds per hole
- Use of machinery for subsequent operations
- Purpose of the crop
- Method of planting i.e. broadcasting versus row planting

9. Name two factors that would help a farmer decide the time of planting cabbages.(1mark)

- Variety of cabbage
- Rainfall pattern/reliability/availability of irrigation/moisture content of the soil
- Incidence of pest and diseases
- Expected harvesting time in light of market availability and suitable weather
- (Reject purpose for which the crop is grown)

10. State four factors that affect the effectiveness of a pesticide. (2marks)

- Weather condition
- Mode of action
- Persistence of pesticides
- Formulation of the pesticides
- Concentration of pesticides
- Timing of application in relation to the stage of pest development

11. State two roles of good soil aeration in crop growth. (1mark)

- Facilitates absorption of water and nutrients
- Facilitate growth of crop roots
- Prevents formation of certain inorganic compounds toxic to plant growth/reduce toxic forms of such elements e.g. Mn, Fe
- Facilitates microbial activities hence release of nutrients e.g. nitrification

12. Give a solution to avoid loss due to each of the following properties of nitrogenous fertilizer when applying to crops.

a) Hygroscopic. (½mark)

They should be stored under dry conditions/should not be exposed to the air

b) Easily leached. (½mark)

They should be applied to an already established crop/should only be used for top dressing

13. Differentiate between close season and trap cropping as used in crop pest control.(2marks)

Close season – leaving a crop field unploughed for some time to help starve to death alternative host pest e.g. pink bollworm in cotton

Trap cropping – planting a crop to attract insect pests away from the main crop

14. Give three benefits of using hybrids and composites in maize production. (1½marks)

- Provides increased yields
- They are resistant to common pests and diseases such as stalk borers, head smuts and maize streak
- They are suitable for low rainfall areas which assures farmers a good harvest/tolerant to drought conditions

15. Highlight four factors that determine the number of time secondary cultivation is done. (2marks)

- Condition of soil after primary cultivation
- Type of tilth required
- Moisture content of the soil
- Slope of the land

- Type of implements used

16. Outline four characteristics of plants used in preparation of green manure. (2marks)

- Should be leafy/highly vegetative
- Have fast growth rate
- Easy to rot
- Should be hardy
- Should be leguminous/ high nitrogen content

17. Name two types of labour records. (1mark)

- Muster roll
- Labour utilization analysis

18. What are the causes of Blossom end rot disease in tomatoes. (1½marks)

- Too much of nitrogenous fertilizer I early growth stages
- Irregular/infrequent watering
- Calcium deficiency in young fruits

19. State four roles of organic matter in sandy soils. (2marks)

- Improves soil fertility
- Improves water holding capacity
- Provides food and shelter for soil living organisms
- Improves soil structure
- Moderates soil temperatures

20. Give two reasons why soil testing is carried out in crop production. (1marks)

- To determine the soil pH
- To determine nutrient content in the soil
- To determine type of crop to grow

SECTION B

21. Diagrams N, N_2 and N_3 below illustrate methods of crop propagation.

a) Name the methods of propagation illustrated in the diagram. (1½marks)

N_1 Grafting/Whip grafting
N_2 Budding/T-budding/bud grafting
N_3 Ground layering/Serpentine/trench layering

b) Why is it necessary to tie as illustrated in N_2? (½mark)

- Helps exclude water and air
- To make a tight contact between the bud and rootstock

22. Below is a diagram of a nursery for raising tomato seedlings.

a) State two advantages of having the part labelled K. (2marks)

- Retaining water
- To modify the temperature
- To reduce the amount of water lost through evaporation/evapotranspiration
- To reduce the impact of raindrops thereby minimising the damage on seedlings; Reduce splash erosion

b) State any four management practices that should be carried out in the nursery from the time the seedlings emerge to the time of transplanting. (2marks)

- Controlling weeds
- Controlling pests and diseases
- Hardening off
- Pricking out
- Proper watering

23. a) What is opportunity cost? (1mark)

It's the value of the best alternative forgone

b)

i) Calculate the farmer's opportunity cost. Show your working. (2marks)

Barley = 2000 × 1500 = 3,000,000

ii) Which crop should the farmer grow? (1mark)

Maize – 2500 × 800 = 2,000,000

Barley – 2000 × 1500 = 3.000.000

Farmer should grow Barley

c) Give two circumstances under which opportunity cost is zero. (2marks)

- Where there's no choice/alternative
- When resources are plenty
- When capital /resources are freely given

24. Different soil samples were tested and their pH values tabulated as shown below.

a) Which soil sample had the greatest acidity? (½mark)

G1

b) Which soil is suitable for growing carrots? (½mark)

G3

c) How would the pH value of soil sample G8 be reduced? (1matk)

- Add sulphur
- Add acidic fertilizer/ASN/SA

d) How would the pH value of soil sample G1 be raised? (1mark)

- Add agricultural lime
- Add basic fertilizer e.g. CAN

25. The diagram below illustrates an example of an arable weed. Study the diagram carefully and answer the questions that follow.

a) Identify the weed illustrated above. (1mark)

Mallow weed/ Malva verticilata/ Malva spp

b) State two harmful effects of the above on the farm. (2marks)

- It is an alternate host for cotton strainer
- Complete for nutrients, space, moisture and light

c) State two ways in which the weed has competitive advantage over crops in the field.

- Produce alot of seeds
- Can survive in soils with low nutrient supply
- Have deep root system
- Seeds remain viable for long periods
- Have short lifecycle

SECTION C

Answer any two questions in this section.

26. a) Differentiate between topping and top dressing. (2marks)

Topping is the removal of stemy fibrous materials in a pasture after a period of grazing while Top dressing is the application of nitrogenous fertilizers to pastures to stimulate faster regeneration

b) Describe the procedure followed when preparing silage in an already constructed trench silo using maize growing in the field. (8marks)

- Prepare the silo before harvesting the crop
- Cut crops at the appropriate stage
- Wilt the crop to a moisture content of about 65-75%
- The crop is chopped up and put into the silo, compacting every 10-12 cm layer
- Fill the silo as fast as possible while maintaining the ridge appearance
- Maintain appropriate temperatures (32^0C) if higher, sprinkle some water and reduce compaction. If lower, add molasses, increase compaction
- Cover ensiled materials with a polythene sheet or a layer of dry grass to make it air and water tight

- Cover the silo with a thick soil layer maintaining the ridge appearance
- A trench is dug all-round the silo to drain off rain water

c) Explain 10 cultural methods of controlling crop pests in the field. (10marks)

- Crop rotation – alternate crops attacked by different pests to break lifecycle of pests/starve pests to death
- Crop nutrition – apply fertilizers/manure to produce healthy strong plants, resist attack
- Closed season – avoid planting crops that are attacked by a certain pest to starve it
- Trap cropping – growing a crop attacked by the pest before the main season/crop; to attract the pest and destroying the crop after attack
- Pruning – to remove microclimates that favour pests; or remove breeding grounds of pests
- Destruction of alternate host – to avoid spread of pests.
- Planting resistant varieties of crops – to reduce attack on the crop; to reduce attack on the crop e.g. goose necked variety of sorghum
- Use of certified planting materials
- Farm hygiene/rouging – to destroy pest infected crop/crop residues to avoid spread
- Early planting – to evade pest attack when plant is weak
- Proper spacing – become difficult for pest to move from one plant to another/close spacing, controls aphids in groundnuts
- Proper tillage – exposes soil borne pests to the sun or birds causing death
- Use of clean planting materials – prevents spread of pests

27.a) State any four problems associated with nomadic pastoralism in Kenya. (4marks)

- Increase spread of livestock disease
- Increased land degradation through soil erosion due to overstocking and overgrazing
- Ethnic tension and conflict over scarce pastures and watering points
- Difficult to control breeding and breeding diseases
- Low yields to energy wasted on constant movement

b) Outline six advantages of rotational grazing in pasture utilization. (6marks)

- Ensure maximum utilization of pasture
- Reduce build-up of pests and diseases
- Animal waste is evenly distributed in all paddocks
- Pasture is allowed time to regrow before being grazed again
- It is possible to apply fertilizers in pasture parts which are not in use
- Excess pasture can be harvested for conservation

c) Explain five ways in which a farmer benefits by keeping farm records. (10marks)

- Show history of the farm
- Used to compare performance of individual enterprise in the farm
- For farm planning and budgeting for farm operation
- Sharing profits and losses in partnerships
- To detect losses and theft in the farm
- Income tax assessment to avoid under or over taxation
- As security to obtain credit

28.a) Outline five effects of mass wasting. (5marks)

- Leads to loss of soil
- Leads to loss of life and property
- Causes siltation of rivers, dams, weirs
- Produces permanent scars on land surface
- Creates features which are tourist attraction
- Creation of new features e.g. lakes

b) Explain seven ways that can be used to harvest water in a farm. (7marks)

- Roof catchment – rain water is collected from roof tops and stored in tanks

- Retention ditches – terraces dug with blond ends to collect and retain surface run-off, allow infiltration
- Dams – walls constructed across river valley to raise water level
- Weirs – shallow walls constructed across river valley to raise water level
- Rock catchment – surfaces of big rocks are used to collect rain water at the base where a shallow wall is constructed and may have a tap
- Wells – holes dug into the ground to allow collection of ground water
- Ponds – pools of water that collect on impermeable grounds and are used for irrigation, animal drinking
- Micro catchments – (land surfaces) environments that are modified to allow use of surface run-off

c) Explain the role of crop rotation in crop production. (8marks)

- Improves soil fertility – when legumes are included in rotation, Nitrogen is fixed in the soil
- Control of weeds – it helps to control weeds which are specific to a certain crops e.g. stiga in cereals/cover crops in rotation will smother certain weeds
- Control pests / diseases – rotation of crops disrupts the life cycles of certain pests and diseases
- Better use of soil nutrients – different crops draw nutrients from varying soil horizons due to different root systems/ different crops have nutrient demands; therefore when alternated leads to better nutrient utilization.
- Control of soil erosion – crop planted in rows e.g. maize should be alternated with cover crops to ensure that soil erosion is reduced
- Improves soil structure – grass lays established will improve soil structure though they roots by binding soil particles together during the grass lay period organic matter will accumulate to enrich the soil and improve soil structure.

CEKENAS
AGRICULTURE
PAPER TWO
443/2
MARKING SCHEME

SECTION A (30 MARKS)

1. State four roles of worker bees in a bee colony. (2marks)

- Feed the queens, drones and broods
- Protect the hive from intruders
- Collect nectar, pollen, tree resins, gums, propolis and water
- Build the comb
- Seal cracks, make honey and bee wax

2. Name a tool used for; (1mark)

a) Tightening barbed wire

Wire strainer/Monkey strainer/Claw bar/Pliers/Claw hammer.

b) Digging and collecting manure

Manure fork

3. List four routes through which pathogens can enter the body of an animal. (2marks)

- Skin
- Eyes
- Nose
- Anus
- Genital organs
- Mammary gland

4. What is the name given, where by hind legs come out first during parturition.(½mark)

Breech presentation (Malpresentation)

5. Give four reasons of maintaining farm tools. (2marks)

- To increase durability
- To reduce the replacement cost
- Increase efficiency
- To avoid injury to the user
- To avoid damage to the tool

6. Name a breed of pig which has the following characteristics.

i) Black body with a white patch on the shoulders and the fore legs. (½mark)

Wessex saddle back

ii) White body with blue spots. (½mark)

Large white

7. Mention two tools used for cutting mature horns in cattle. (1mark)

- Cattle
- Dehorning wire
- Dehorning saw

8. Name the other combination of a tool used together with the following. (2marks)

a) Canula

Trocar

b) Brace

Auger bit/bit

c) Elastrator

Rubber ring

d) Wood chisel

Mallet

9. Give four factors that would affect digestibility of food in livestock. (2marks)

- Chemical composition of the feed
- Form in which the feed is offered to the animal
- Species of the animal
- Ratio of energy to protein
- Quantity of food already present in the digestive system of the animal

10. State two reasons why a wire loop hanging in Kenya Top Bar Hive (KTBH) is recommended to be smeared with grease. (1mark)

- To prevent ants from getting into the hives
- To prevent rusting of the wire

11. State four reasons for castration in pig production. (2marks)

- Prevent uncontrolled breeding
- Improve the quality of the meat
- Promote faster growth
- Make them docile and easy to handle
- Control breeding diseases
- Control breeding

12. Distinguish between the following practices in livestock production.

a) Crutching and ringing in sheep production. (1mark)

Crutching is the cutting of wool around the reproductive organs of a female sheep while ringing is the cutting of wool around the sheath of the penis in rams to facilitate mating.

b) Cropping and harvesting in fish farming. (1mark)

Cropping is the removal of fish of marketable size from the pond while harvesting is the removal of all the fish from the pond (to facilitate cleaning)

13. Name three aspects to examine in the dung to determine ill health in livestock.(1½marks)

- Texture
- Colour
- Smell
- Egg/larvae/parasite

14. List four structures that are necessary in handling dairy animals. (2marks)

- Crush
- Fence
- Milking palour/shed
- Head yoke
- Isolation yard

15. Name the causal agents in livestock diseases. (2marks)

i) Anaplasmosis

Protozoa/Anaplasma marginale

ii) Anthrax

Bacteria/Bacillus anthracis

iii) Swine fever

Virus/Irido virus

iv) East coast fever

Protozoa/Theirelia parva

16. State three cultural uses of livestock. (1½marks)

- Status symbol
- Medium of exchange
- Social ceremonies
- Recreation

17. Name the intermediate host of the following endoparasites. (1mark)

a) *Fasciola hepatica*

Fresh water snail/Mud

b) ***Taenia saginata***
Cattle

18. Give three signs of heat in rabbit. (1½marks)

- Restlessness
- Frequent urination
- Swollen vulva
- Doe throws itself on its sides
- Doe rubs herself against the wall or any solid object
- Doe tries to contact other rabbits in the next hutch

19. What is dry cow therapy. (1mark)
Is the application of antibiotics in the teat canal of the cow's udder during drying off period to prevent mastitis

20. Name two examples of notifiable disease in livestock. (1mark)

- Rinderpest
- Newcastle
- Foot and mouth
- Anthrax

SECTION B
Answer all the questions in this section.

21. The diagram below is an illustration of an egg. Study it carefully and answer the questions that follow.

a) Name the parts labelled. (2marks)
A Albumen (egg white)
B Airspace (air cell)
C Yolk
D Chalaza

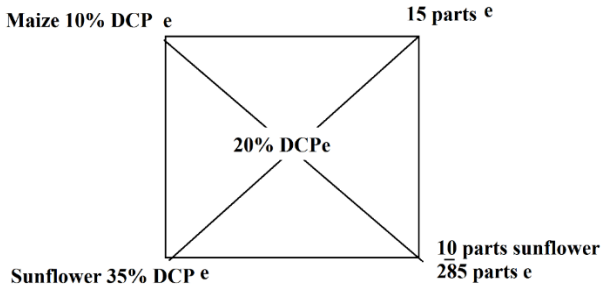
b) State three qualities that should be considered when selecting eggs for incubation.

- Should be fertilized
- Be of medium size
- Have smooth shell
- Have no any abnormalities
- Oval in shape
- Free of any cracks in the shell
- Clean

c) What is the function of the part labelled C in a fertilized egg. (1mark)
Supply the embryo with nutrients

22.a) Define the term digestible crude protein(DCP). (1mark)
The amount of crude protein absorbed by an animal's body from a feed

b)



Total parts = 25
Quantity of maize = 120kg of maize

Quantity of sunflower = $\frac{15}{25} \times 200$= 80kg of sunflower

23. Study the diagram below of an ox-plough and use it to answer the questions that follow.

a) Give the functions of the parts labelled. (2marks)

G Share – Cut the furrow slice horizontally

F Mould board – invert the furrow slices

b) Name the part labelled. (2marks)

K U bolt

I Draft rod

c) Mark on the diagram using letter M and N the two parts use to adjust the depth of ploughing. (1mark)

Land wheel

Beam

(Letter M and N on this parts)

20. Below is an illustration of an activity carried out by a poultry farmer keeping layers.

a) Identify the practice. (1mark)

Egg candling

b) Give two abnormalities that can be observed using the above illustrated practice.

- Presence of yolk with blood spots
- Shell having air cracks
- Egg shell is broken
- Egg shell is very porus

SECTION C

Answer any two questions in this section

25,a)Describe ten short term tractor servicing. (10marks)

- The engine oil should be checked daily by use of dipstick and oil level maintained
- The fuel level should be checked at the start of everyday work and added if necessary
- Water level in the radiator should be inspected and if low topped up
- The level of electrolyte should be checked daily and topped up with distilled water if low
- The nuts and bolts should be tightened everyday while the lost ones are replaced
- Grease should be applied regularly to the moving parts
- Large sediments from the sediments bowl should be removed
- Tyre pressure should be checked every morning before the day's work and adjusted accordingly
- The fan belt tension should be checked to ensure that it deflects between 1.9cm and 2.5cm when pushed
- The brake shaft bearing should be greased and brake fluid level maintained

b) Explain five maintenance practices that should be carried out in an ox-cart. (5marks)

- Moving parts should be oiled/greased regularly to reduce friction
- The yoke should be maintained/properly padded
- Broken trailer bodies should be repaired/replaced
- Tyre pressure should be checked daily before the start of work inflated to acceptable pressure
- Loose nuts and bolts should be tightened
- Paint if to be stored for long to avoid rusting
- Clean after use
- Store under a shed
- Replace lost nuts and bolts

c) Explain five factors that a farmer should consider when sitting an apiary. (5marks)

- Should be near water to facilitate collection by bees
- Should be area with availability of flowers to facilitate collection of pollen and nectar by bees
- Should be sheltered place protected from strong sun and wind
- Should be free from pest and diseases

- Site should be free from dampness and bad odours

26.a) Describe the essentials of clean milk production in dairy farming. (10marks)

- Healthy dairy cows not suffering from mastitis
- Clean dairy cows (teat)
- Healthy milkman not suffering from TB etc.
- Clean milking shed
- Clean milking utensils
- Clean milkman i.e. whole body
- Milk filtration, cooling and storage
- Proper feeding to avoid flavours in milk
- Proper milking technique without injuring feats
- Use of all recommended milking materials e.g. udder cloth filtering pads etc.

b) Outline the disease predisposing factors in livestock. (5marks)

- Age of the animal
- Sex of the animal e.g. mastitis for female
- Colour of the animal e.g. black-heat stress
- Breed of the animal
- Species of the animal
- Change in environmental temperatures
- Heredity
- Overcrowding
- Presence of disease vectors
- Contact with other sick animals
- Physiological conditions

c) State five control measures for fowl typhoid. (5marks)

- Kill and properly dispose infected birds
- Maintain proper hygiene
- Regular vaccination
- Obtain chicks from reliable sources
- Treatment using sulphur drugs

27.a) Explain the importance of a hedge in a farm. (10marks)

- Provide security from thieves, predators
- Enable paddocking/ rotational grazing, mixed farming
- Control parasite and disease by keeping away foreign animals
- Show boundaries between farms
- Hedges act as windbreaks
- Have an aesthetic value
- Hedges help to conserve soil and water
- Hedges may be source of fruit/fodder/firewood
- Enable isolation of animals for different purpose
- Help to avoid boundary disputes

b) Give the differences between a petrol and a diesel engine. (5marks)

Diesel	Petrol
Uses diesel as fuel	Uses petrol as fuel
Fuel and air mixed with cylinder	Fuel and air mix in the carburettor before it gets into cylinder
Fuel ignited by compression of air	Fuel ignited by an electric spark
Produce a lot of smoke	Produce less smoke
Heavy and suited for heavy duties	Light and suited for light duties
High compression ration 1:14 to 20	Low compression ratio 1:8
Has an injector nozzle	Has a spark plug

c) Explain the importance of steaming up in dairy cattle. (5marks)

- Provide nutrients for maximum foetal growth
- Help build up energy for parturition
- Ensures birth of a healthy animal
- Promotes good health of the mother
- Increases and maintains high milk yield after birth

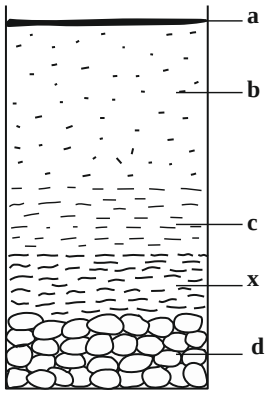
IGEMBE CENTRAL
443/1
PAPER 1
TIME: 2 HRS
SECTION A (30 MARKS)

Answer all questions in this section in the spaces provided.

1. List four methods of farming (2 marks)
2. Give four factors that would determine the stage at which a crop is harvested. (2 marks)
3. State four disadvantages of organic mulches. (2 marks)
4. Give three reasons for early seedbed preparation. (1½ marks)
5. Outline four functions of magnesium in crops. (2 marks)
6. State four objectives of land tenure reforms. (2 marks)
7. State two disadvantages of late defoliation in pasture management (1 mark)
8. Define the following terms as used in economics
a) National income (1 mark)
b) Per-capita income (1 mark)
9. Give three aspects of lights that influences crop production. (1½ marks)
10. For each of the following tertiary operations, give one reasons why its carried out. (3 marks)
i) ridging……
ii) rolling……
iii) levelling……
11. State two surface irrigation methods. (1 mark)
12. Give two features of plastic pipes a farmer should consider before buying the pipes (1 mark)
13. Give four reasons why agriculture is important for the development of industries. (2 marks)
14. List four disadvantages of shifting cultivation. (2 marks)
15. Name two areas of scientific study which shows that agriculture is a science. (1 mark)
16. State four factors that influence wind erosion (2 marks)
17. List **two** types of terraces. (1 mark)
18. What is Afforestation (1 mark)

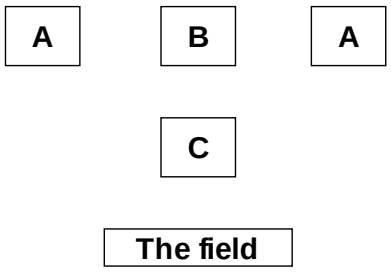
SECTION B (20 marks)

19. Form Two student put some soil sample in a measuring cylinder, added some water and sodium carbonate and then covered the cylinder will the hand and shook the cylinder for about two minutes. He left the cylinder on the bench for one hour. The results was as shown below.



a) Name the layers marked a,b,c,d (2 marks)
i) What was the function of sodium carbonate in this experiment (1 mark)
ii) What was the aim of this experiment (1 mark)

20. The illustration below shows a four-heap system of making compost manure. Study it and answer the questions that follow.



i) By use of arrows indicate how the decomposing materials should be transferred from one heap to another till the manure is applied in the field. (2 marks)
ii) How long does the material take to be ready for application in the field as manure.(1 mark)
iii) Give one reason for turning the material in the heaps regularly. (1 mark)
iv) Give two reason why its necessary to sprinkle water in the heaps. (2 marks)

21. a) State four disadvantages of weeds in crop production. (4 marks)
b) Name three methods used to control weed in pastures. (3 marks)
c) Give three advantages of biological control of pest in crop production (3 marks)

Section C (40 marks)

Answer any two questions in this section in the space provided

22. a) Discuss vegetable crops under the following sub headings.
i) Definition of vegetable (1 mark)
ii) management of perishable vegetables. (4 marks)
iii) importance of vegetable (4 marks)
iv) common stem vegetable (3 marks)
v) staking in vegetable (3 marks)
b) Describe five nursery practices carried out while seedlings are growing. (5 marks)

23. a) Describe how water is treated to remove solid impurities (5 marks)
b) Explain the importance of irrigation in crop production. (5 marks)
c) Explain how farmers may adjust to risk and uncertainties in farming business. (10 marks)

24. a) Explain the benefits of lands consolidation. (6 marks)
b) Briefly explain six factors influencing mass wasting. (6 marks)
c) Explain four ways of improving labour productivity (8 marks)

IGEMBE CENTRAL
443/2
PAPER 2
TIME: 2 HRS

SECTION A (30 MARKS)

Answer all questions in this section in the spaces provided.

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

2. Give four preventive measures for livestock disease (2 marks)

3. Give two reasons for hoof trimming. (1 mark)

4. List four materials that can be used in constructing Kenya Top Hive (2 marks)

5. State two bloodless methods of castration in rams (1 mark)

6. Give four characteristics of a good site for a fish pond. (2 marks)

7. State four reasons for breeding in livestock. (2 marks)

8. Name four parts of the ignition system of a petrol engine. (2 marks)

9. State four control measures of fowl typhoid. (2 marks)

10. State four reason for maintaining farm tools and equipment. (2 marks)

11. Distinguish between each of the following breeding practices:

a) crutching and ringing. (1 mark)

b) tupping and serving (1 mark)

12. State four methods of fish preservation. (2 marks)

13. Differentiate between the following tools.

a) Bastard file and wood rasp (1 mark)

b) Coping saw and hacksaw (1 mark)

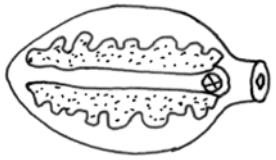
14. State four egg abnormality observed during egg candling (2 marks)

15. State four reasons why a calf should be fed on colostrum (2 marks)

16. Name four stages ticks go through in their life cycle. (2 marks)

SECTION B (20 marks)

17. The diagram below represents an internal parasite in livestock



a) Identify the parasite (1 mark)

b) Name the infective stage of the above parasite (1 mark)

c) State **three** control measures of the above parasite (3 marks)

18. A farmer wants to prepare a calf rearing ration containing 22% digestible crude protein. Calculate the amount of rice bran (20% DCP) and simsim seed cake (45% DCP) the farmer should use to prepare 1000kg of the ration, showing your working. (5 marks)

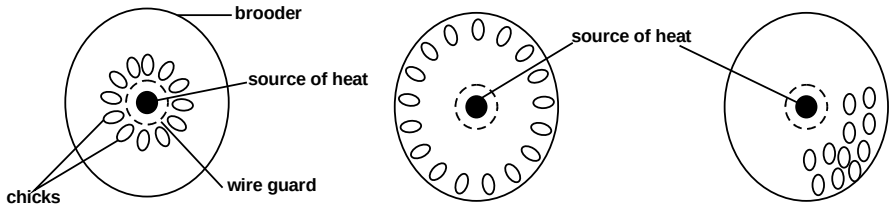
19. Below are illustrations showing the behaviour of chicks in various brooders. Study the diagrams and answer the questions that follow

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

ii) State two ways of overcoming the problem B. (1 marks)

iii) Why brooder is recommended to be round in shape. (1 mark)

20. The following is an illustration of a chick suffering from malnutrition.



a) Identify the mineral deficiency shown by the chick (1 mark)
b) Apart from the symptom illustrated above, give three other symptoms of mineral deficiency in poultry. (3 marks)
c) Suggest a method of controlling the disorder above. (1 mark)

SECTION C (40 marks)
Answer any TWO questions from this section

21. a) Describe conditions under which bees abscond the hive. (5 marks)
b) State five advantages of farm mechanization (5 marks)
c) Discuss mastitis under the following sub-headings.
i) Animals attacked (1 mark)
ii) Causal organism (1 mark)
iii) Predisposing factors (4 marks)
iv) Control and treatment (4 marks)

22. a) Describe the long term services carried out during tractor servicing (10 marks)
b) Describe five physical characteristics of a good dairy cow for breeding. (5 marks)
c) State five functions of water in the body of livestock (5 marks)

23. a) Give five advantages of embryo transplant (5 marks)
b) Describe any ten advantages of battery cage system of rearing layers (10 marks)
c) Outline the signs of farrowing in pigs. (5 marks)

IGEMBE CENTRAL
443/1
PAPER 1
TIME: 2 HRS
SECTION A (30 MARKS)

1. Farming methods
- Shifting cultivation
- Nomadic pastoralism
- Organic farming
- Mixed farming
- Agroforestry

2. Factors that would determine the stage and which crops is harvested
- Intended use of the crop
- Chemical concentration of the produce/stage of maturity/change in colour
- Prevailing weather conditions
- Market demand for the produce/market price

3. Disadvantages of organic mulches.
- expensive to transport and apply/bulky
- could be a fire risk
- provide breeding ground/hiding places for pests
- intercept lights showers of rainfall
- can spread pest/weed/diseases

4. reasons for early seed bed preparation
- allow time for organic matter to decompose and form humus
- facilitates timely subsequent operations
- allows time for weeds to die
- minimises competition for labour
- allows pests and disease causing micro-organism to starve and die
- allows soil aeration/gaseous exchange
- allows water infiltration

5. Functions of magnesium in crops
- Necessary in chlorophyll formation
- Promote nitrogen fixation
- Activate enzymes
- Synthesis of oil in oil crops

6. Objectives of land tenure reform
- Encourage conservation measures on land
- Improves productivity of the land and labour
- Encourage commercial instead of subsistence production
- Encourage farmers to invest more through offering security
- Allows flexibility in production depending on the market
- Effect utilization of natural resources through irrigation

7. Disadvantages of late defoliation in pasture management
- Has low dry matter digestibility
- Has low leaf: stem ration/less leafy
- Has low crude protein yield

8a) Natural income
- Is the monetary value of all goods and services produced in a country for a period of one year

b) Per-capita income
- Is the average income per head in a country in a period of one year
- Is the or average income of all the citizens of a country in a period of one year

9. Aspects of light that influences crop production
- Light intensity

- Light duration
- Light wavelength

10. Reasons why the following tertiary operation are carried out

i) Ridging
- Encourages tuber expansion
- Allow easy harvesting of root crops

ii) Rolling
- Prevents small seeds from being carried away by wind
- Prevent soil erosion
- Increases seed–soil contact

iii) Levelling
- Promotes easy germination of small seeded crops

11. Surface irrigation methods
- Flood irrigation
- Basin irrigation
- Farrow irrigation

12. Two features of plastic pipes a farmer should consider when buying pipes
- Cost
- Flexibility
- Colour
- Size/diameter
- Thickness
- Durability

13. Reasons why agriculture is important for development industries
- Supply of raw materials to the industries
- Market for industrial goods

14. Disadvantages of shifting cultivation
- Low capital investment
- No disease and pest build up
- Soil structure is maintained
- No land disputes since land is not owned individually

15. Name two areas of scientific study which shows that agriculture is science
- Crop pathology
- Entomology
- Agricultural engineering
- Soil science
- Genetics

16. Factors that influence soil erosion
- Ground cover – vegetation cover protect the soil against erosion by wind
- Continuous cultivation makes soil loose thus easily eroded by wind
- Overstocking leading to overgrazing making soil loose
- Deforestation – removal of vegetation cover exposes soil to agent of erosion

17. Types of terraces
- Broad based terrace
- Bench terrace
- Bench terrace
- Level terraces
- Fanya juu terraces

18. Afforestation – is the practise of growing in areas where land had not existed

Section B

19. a. – floating organic matter/humans
    b. – water with fine clay materials and dissolved mineral salts
    c. – silt and clay

d. – gravel
sodium carbonate–aids in dispensation of the particles
The aim of the experiment was – to show that soil is made up of different sized particles

20i)

ii) 3 – 6 months

iii) To facilitate decomposition

iv) To regulate temperature

- To create a moist environment to microbial activities

21. <u>disadvantages of weeds in crop production</u>

- compete for resources with crops
- increase the cost of crop production
- contaminate the crop lowering the quality
- irritate the workers lowering labour efficiency
- some act as alternate host of crop pest and diseases
- some weeds are parasitic to crops
- some weeds have allopathic effects

b) <u>Methods of controlling weeds in pastures</u>

- burning pastures after the grazing period
- mowing/slashing/uprooting/physical control
- chemical control
- biological control

c) <u>Advantages of biological control of pest</u>

- environmentally friendly
- less labour required
- produce not contaminated

<u>Section C MS</u>

22a) i) Definition of vegetable;
Plant/plant part harvested and eaten fresh

ii) <u>Management of perishable vegetable</u>

- Rapid means of transport to market
- Sell from the farm rather than from the market
- Sell to the closet market
- Identify consumers with regular need e.g. school hospital

iii) <u>Importance of vegetable</u>

- Source of vitamin A, B, C
- Source of minerals e.g. calcium, iron, phosphorus
- Source of income
- Food spices
- Food for livestock

iv) <u>Common stem vegetables</u>

- Leek
- Asparagus
- Onion
- Mushroom

v) <u>Staking of vegetables</u>

- Stakes are used to support tall varieties by tying the plant on to the stake at 20cm intervals

b) - Watering

- Mulching
- Weeding
- Pricking out
- Shading
- Pest and disease control
- Hardening off

23a) Treating water to remove solid impurities (1x5)

- At intake water is passed through a series of sieves with different sized holes to trap large particles. E.g. leaves, grass, polythene
- Aluminium sulphate (alum) is added to water in the mixing chamber to coagulate the solid particles suspended in water
- Water is passed to a large circular coagulate tank where coagulated solid particles settle
- Water is then passed through a filtration tank where all the remaining solid particles are removed
- The layers of sand and gravel in the filtration tank allows the water to seep through slowly and leave all solid particles behind

b)

- Irrigation increases crop yields and ensure steady food supply through out the year
- Maximises the utilization of resources
- Important for reclamation of arid and semi-arid areas
- Sources of employment
- Provides a regular, reliable and adequate supply of water with areas with little rainfall
- Promote crop production for export market hence contribute to foreign exchange
- Allows production of puddle rice
- Allows growing of crops in green house

c)

- Diversification – setting up several and different enterprises on the farm so that should one fail the farmer does not suffer a total loss
- Selecting more certain enterprises – select enterprises which earns steady income
- Contracting – farmers enters into a contract which consumers to supply certain goods over a specified period of time at an agreed price
- Insurance – insurance company take risk of insuring farm machinery, crops, livestock against loss
- Input rationing – farmers control the quantities of input used in various enterprises

~ Flexibility in production methods – farmers should design their enterprises in such that they can be replaced by others in case of low production

~ Adopting modern methods of production – this will reduce the amount of risk

24a). Benefits of land consolidation

- Proper supervision of the land
- Economic use of time and saving of transportation cost
- Easy provision of agricultural advice by extension officers
- Ensures sound farm planning and adoption of crop rotation programmes
- Facilitate soil conservation and land improvement
- Promote construction of permanent structures
- Registered land gives the farmer legal ownership and title deed which can be used to obtain loan
- Weed, pest and diseases are enhanced
- Facilitate modernisation because of large holding

b) Factors influencing mass wasting

- The slope of the land – steep slopes lead to faster movement of materials ***(6x1=6 mks)***
- The nature of material – mass wasting occurs easily where massive rocks overlie sedimentary rocks
- Climate – heavy rainy periods encourage mass wasting
- Vegetation cover – mass wasting is easy and faster in a bare ground than in a vegetated ground
- Human activities – deforestation, quarrying building, etc. encourage mass wasting
- Forces within earth crust – e.g. earth tremors and volcanic eruptions causes mass wasting.

c)

- Training – this may be done formally through scholars and collages, FTC's, field days, agriculture shows, demonstration farms, workshops, etc.
- Farm mechanisation–assist labour to perform work faster and more efficiently
- Giving incentives and improving terms and conditions of service
- Labour supervision

IGEMBE CENTRAL
443/2
PAPER 2
TIME: 2 HRS

SECTION A (30 MARKS)

1. Sheep breeds reared in Kenya
- Merino
- Black head Persian
- Romney Marsh
- Dorper
- Corriedale
- Hampshire down
- Red Massai sheep First 4 x ½ =(2 marks)

2. Preventive measure for livestock diseases
– Vaccination
– use of prophylactic drugs eg. Coccidiostat
– Proper feeding
– Isolation of sick animals
– Imposition of quarantine
– Treatment of sick animals
– proper selection and breeding First 4 x ½ (2 mks)

3. Reasons for hoof trimming
- Prevent lameness
- Control foot rot
- Prevent injury e.g. during mating

4. List four materials that can be used in constructing Kenya Top Bar hive
- Timber
- Plain wire
- Nails
- Iron sheets (4 x ½ = 2 mks)

5. Bloodless method of castration
- Use of rubber ring and elastrator
- Use of burdizzo (2 x ½ = 1 mks)

6. Characteristics of a good site for a fish pond.
- Topography/slope of the land should be gentle sloping
- Reliable water source
- Should not have cracks or anthills
- Site should free of gravel/stones/sand/preferable should be clay soil
- Secure from predators and thieves
- The site should be accessible (First 4 x ½ = 2 mks)

7. Reasons for breeding livestock
- Increase productivity
- Expand inherited potential of the animal
- Satisfy consumer's taste
- Increase growth rates for early maturity
- For environmental adoptability (first = 4 x ½ = 2 mks)

8. Parts of ignition system of a petrol engine
- Ignition coil
- Contact breaker
- Condenser
- Spark plug
- Wires
- Ignition key

- Battery (First 4 x ½ = 2 mks)

9. Control measures of fowls typhoid
- Kill and properly dispose infected birds
- Maintain proper hygiene
- Regular vaccination
- Obtain chicks from reliable source
- Treatment using sulphur drugs (First 4 x ½ = 2 mks)

10. Reasons for maintaining farm tools and equipment
- Ensure efficiency
- Make them durable
- Reduce replacement cost
- Avoid injury to the user
- Avoid damage of tools and equipment (First 4 x ½ = 2 mks)

11. a) Crutching is the cutting of wool around the external reproductive organ of female sheep to facilitate mating while ringing is the trimming of wool around the sheath of the penis in rams to facilitate mating (mark as a whole)

b) Tupping - the acting of mating in goats and sheep while serving is the act of mating in cattle and pigs

12. Methods of preserving fish
- Freezing
- Salting
- Sun drying
- Smoking

13. a) Bastard file is used for smoothing metals while wood rasp is used for smoothing wood. (1 mk) (mark as a whole)

b) Coping saw is used for cutting curves in wood while hacksaw is used for cutting metal (1 mk) (mark as a whole)

14. Abnormalities observed during egg candling
- Blood spots
- Meat spots
- Excessively porous shell
- Small size of air space
- Wrong position of air space/yolk (4 x ½ = 2 mks)

15. Reasons why a calf should be fed on colostrum
- Colostrum is highly digestible
- Colostrum is highly nutritious
- Colostrum contains antibodies which boost immunity
- Has laxative effect
- Colostrum is highly palatable (First 4 x ½ = 2 mks)

16. Name the four stages ticks go through in their life cycle (2 mks)
The egg
The larva
The nymph
The adult (4 stages x ½ = 2 mks)

17. The diagram below represents an internal parasite in livestock

(a) Identify the parasite
Liver fluke (1 mak)

(b) Name the infective stage of the above parasite (1 mk)
– metacercaria

(c) State three control measures of the above parasite
– Physically killing the parasite
– adding copper sulphate solution to stagnant water to kill the snail
– draining swampy areas or levelling depressions that may hold water in pastures to keep off water snails

– avoid grazing animals near marshy or water-logged areas
– Routine drenching of animals with anthelmintic drugs such as sodium sulphate
– burning of infected pasture during dry season (Any 3 = 3 x 1 = 3 mks)

19i).
A – very cold (1 mk)
B – very hot (1 mk)
C – Draught from one side (1 mk)

ii) Reduce the amount of heat
Increase ventilation (2 x 1 = 2 mk)

20a). Manganese deficiency

b) Reduced hatchability
- Sterility
- Reduced shell thickness

c) Give birds balanced diet

SECTION C

21. Describe reasons under which bees abscond the hive (5 mk)
- Shortage of food and water forces the bees to migrate in search of the same
- Disease outbreak
- Attack by parasites and predators
- Dampness and bad smells
- Overcrowding in the hive
- Infertile queen
- Sickness or death of queen
- Excess heat in the hive
- Damage of brood combs (Any 5 = 5x1 = 5 mks)

b). State five advantages of farm mechanization
- Makes operations timely and faster
- Makes work easier and enjoyable
- High equality job is done than human labor
- High yields are achieved because farm operations are carried out on time
- Economical in terms of labor demand
- Pests and disease outbreak can be controlled relatively in a shorter time
- Farmers benefit from economies of scale
- There is increased efficiency (5x1 = 5 mks)

c) Discuss Mastitis disease under the following headings

i) Animals affected
All animals with mammary glands – cattle, sheep, goats, pigs, camels, horse (1x1 = 1mks)

ii) Causal organisms
Bacteria or
Streptococcal mastitis, staphylococcal mastitis
It the candidates uses scientific name.
The rules of Binomial nomenclature should be observed (1 mk)

iii) Predisposing factors
- Age – older animals are more likely to be infected as compared to younger ones
- Stage of lactation period – Animals are more likely to suffer from mastitis at the beginning and at the end of lactation
- Udder attachment – animals with large loosely hanging udders are more susceptible to mastitis infection
- Poor sanitation – this increases the multiplication of the bacteria causing mastitis
- Poor milking technique – this may result in mechanical injury of the teats and weakening of sphincter muscles of the teat

(any 4 factors well explained) (4 Marks)

iv) Control and treatment

- Open wounds on the teats should be treated immediately
- Sharp objects should be removed from grazing and milking areas to prevent injuries
- Disinfect the udder clothes after milking each animal
- Use of strip cup to detect/check mastitis on infected cow
- Infected cow should be milked last and the milk disposed off
- Dry cow therapy/infusion of long-acting antibiotics into teat canal when drying the cow
- Strict cleanliness and use of disinfectants during milking
- Using the right milking techniques
- Use of a teat dip on every teat after even milking
- The affected quarter of the udder is emptied of milk and an antibiotic is instilled and left for 12 hours and repeated when necessary

(Any four control measures = 4 mks)

22. Describe the longterm services carried out during tractor servicing (10 mks)

- Engine oil should be drained completely from the sump and replaced with new oil
- The steering gear box oil should be inspected and refilled if the level goes below the recommended level
- The oil in the differential should be replaced as recommended
- The linkage and the pulley attachment should be greased
- Pulling oil level should be checked and added if need be
- The dirty oil should be remarked and replaced with clean one (5x2 = 10 mks)

b) Describe five physical characteristics of a good dairy cow for breeding

- Wedged/ triangular shaped
- Big stomach to store more food
- Large well developed udder and teats
- Well set hind quarters to allow room for big udder
- Long thin neck and small head
- Lean body with little flesh
- Large milk veins and milk wells
- Straight top line
- Long thin legs
- Prominent/visible pin bone (5x1 = 5mks)

c) State five functions of water in the body of livestock

- Regulate body temperature through sweating evaporation
- Transportation of nutrients within the body
- It forms components of body cells and fluids
- Used in biochemical reactions. E.g. digestion of food.
- Helps in the excretion of waste products from the body
- It forms part of animal products e.g. milk contains 83% water and egg curtains 55% water
- Makes cell turgid, maintaining the shape of the body cell (5x1 = 5 mks)

23. Give five advantages of embryo transplant

- It is possible to implant embryo from a high quality female to a female of less quality hence improve the performance of the offspring
- It stimulates milk production in a female that was not ready to produce milk
- A highly productive female can be spread over a large area to benefit many farmers
- It is easier to transport embryos in test tubes than the whole animal
- Embryos can be stored for long periods awaiting availability of the recipient female

b_ Describe any ten advantages of battery cage system of rearing layers

- Higher egg production due to less energy wastage by birds
- Accurate egg production can be kept
- Cannibalism and egg eating are minimized
- Eggs are clean because hens do not step on them
- The system can easily be mechanized
- Birds do not contaminate food and water

- Handling is easy as hens are restricted to a small place
- Broodiness is discouraged as birds do not reach the eggs
- A large number of birds can be kept in a small space hence higher stocking rate
- Sick birds can easily be detected and isolated for treatment
- Wire floors prevent re-infection of parasitic worms and coccidia
- There is no bullying during feeding
- There is low labor requirements

c) Outline the signs of farrowing in a sow

- There is enlargement of the vulva
- The sow becomes restless
- Muscles on each side of the tail slacken
- There is loss of appetite
- The udder and the teats become enlarged
- The sow collects bedding material at one corner to build nest
- 24 hours before farrowing there is milk present in the teats (Any 5 = 5x2 = 5 mks)

-

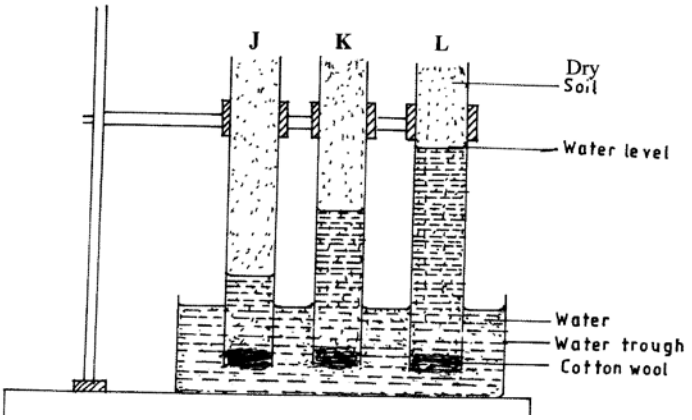
MURANGA SOUTH
443/1
AGRICULTURE
TIME : 2 HOURS
SECTION A

1. Name three forms of horticulture practiced in Kenya. (1 ½ mks)
2. State three disadvantages of small scale farming (1 ½ mks)
3. a). State four reasons for land preparation (2 mks)
   b). Name two implements that can be used to carry out sub – soiling (1mk)
4. State four ideal characteristics of plant used to make green manure. (2 mks)
5 a). What is opportunity cost (1mk)
   b). Give three instances when opportunity cost does not exist (1 ½ mks)
6. Give four reasons why farmers may choose seeds over vegetative materials during planting
7. Outline four ways of controlling damping off disease on vegetable seedling in a nursery
8. State four management practices in intensive hedge grow agroforestry (2 mks)
9. Name four types of market structures in agricultural marketing (2 mks)
10. State two limitations of tissue culture in crop production. (2 mks)
11. Differentiate between the following terms
i. Over – sowing and undersowing (2 mks)
ii. Seed dressing and seed inoculation (2 mks)
12. State four practices carried out during harvesting of beans (2 mks)
13. Name three biological weed control methods (1 ½ mks)
14. State four parameters that can be used to measure the economic development of a country.

SECTION B (20 MARKS)

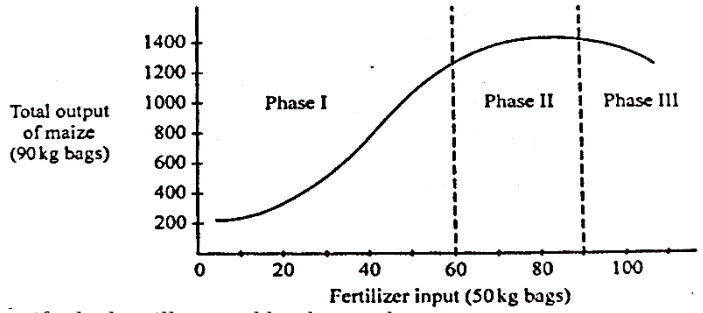
ANSWER ALL THE QUESTIONS IN THE SPACES PROVIDED

15. The diagram below illustrates an investigation on a property of soil samples labelled J, K & L



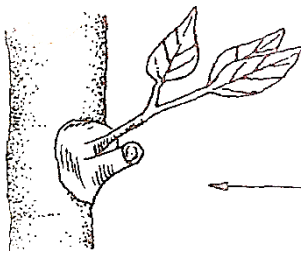
a). If the levels of water shown in the diagram were observed after three hours, name the property of soil being investigated. (1 mk)
b). What is the relationship between the soil property named in (a) above and the size of soil particles? (1 mk)
c). Which soil sample would be suitable for growing paddy rice. (1 mk)
d). Give two characteristics of soil J (2 mks)
16. a). Distinguish between straight and compound fertilizer (1 mk)
b). A farmer applied 200kg of CAN (21%N) and DSP 150kg (40% P_2O_5) per hectare on his five hectares maize crop. Calculate the amount of Nitrogen and phosphorus the farmer applied on his crop. Show your working (4 mks)

17. Below is a graphical representation of a law in agricultural economics. Study the graph carefully and answer the questions that follow.



a). Identify the law illustrated by the graph. (1 mk)
b). Explain how each additional unit of fertilizer input relates to the total output of maize in phases II and III. (2 mks)
c). State the importance of the law identified in (i) above to the maize farmer. (1 mk)
d). Name the irrational phase of operation (1 mk)

18. The diagram below shows a method of budding



a). Identify the method of budding
b). Name two other methods of budding apart from one illustrated (2 mks)
c). Give two advantages of budding in crop production

SECTION C (40 MARKS)
ANSWER ANY TWO QUESTIONS IN THE SPACES PROVIDED

19. a). Describe five biotic factors that influence agricultural production (5 mks)
b). Explain five reasons for draining water – logged soils (5 mks)
c). Explain four factors considered when selecting planting materials (4 mks)
d). Describe the harvesting of tea (6 mks)

20. a). Give five reasons why late defoliation is discouraged in pasture utilization (5 mks)
b). Describe ten harmful effects of crop pests (10 mks)
c). Describe five methods used in water harvesting (5 mks)

21. a). Describe five post – harvesting management practices carried out on various crops.
b). Discuss carrots production under the following sub – headings
i). Field management practices (3 mks)
ii. Land preparation (3 mks)
c). State four advantages of communal land tenure system (4 mks)

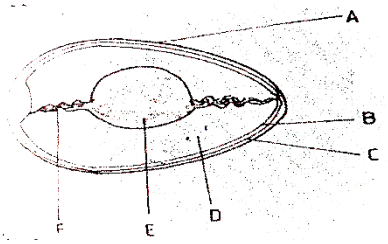
MURANGA SOUTH
443/2
AGRICULTURE
TIME: 2 HOURS

SECTION A (30 MARKS)

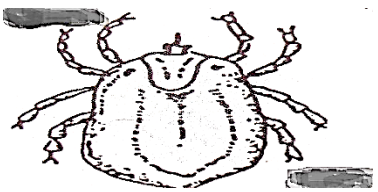
1. State four reasons for maintaining farm tools and equipment (2 mks)
2. Give the meaning of the following terms as used in livestock health
a). Predisposing factor (1 mk)
b). Incubation period (1 mk)
3. State four practices that come immediately after complete milking in a milking shed.(2 mks)
4. List four preventive measures of livestock diseases (2 mks)
5. List four materials that can be used in construction of Kenya Top Bar Hive (2mks)
6. State two control measures of keds in sheep (1 mk)
7. State the functional difference between the following
a). Cross cut saw and rip saw (1 mk)
b). Wood chisel and cold chisel (1 mk)
8. State four microbial activities that occur in the rumen (2 mks)
9. Name four beef cattle breeds (2 mks)
10. Give four signs of heat in cattle (2 mks)
11. Name four notifiable diseases of livestock (2 mks)
12. State four signs of stress in a flock of chicken (2 mks)
13. State four advantages of a two – stroke cycle engine (2 mks)
14. State four conditions that causes swarming in bees (2 mks)
15. State four visible symptoms of round worm infestation in cattle (2 mks)
16. Differentiate between a broiler and a capon (1 mk)

SECTION B (20 MARKS)
ANSWER ALL THE QUESTIONS IN THE SPACES PROVIDED

17. The diagram below is an illustration of an egg. Study it carefully and answer the questions that follow.



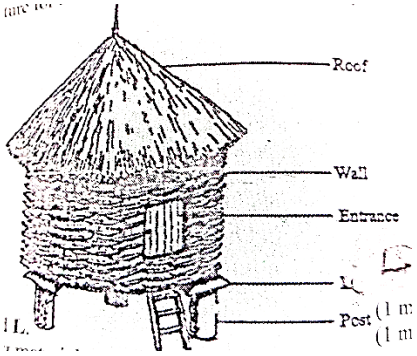
a). Name the parts labelled B, C, D and F (2 mks)
b). State two qualities of the part labelled A that should be considered when selecting eggs for incubation (2 mks)
c). What is the function of the part labelled E in a fertilized egg? (1 mk)
18. The diagram below illustrates an external parasite of livestock



a). Identify the parasite (1 mk)
b). Apart from eggs and adults, name two other developmental stages of the parasite illustrated above.
c). Name two livestock diseases transmitted by the illustrated parasite (1 mk)

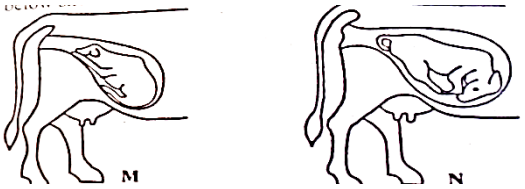
d) Explain two ways in which the environment is altered to control the parasite illustrated above(2 mk)

19. The diagram below shows a farm structure for storing grains



a). Identify the farm structure (1 mk)
b). State the function of the part labelled L (1 mk)
c). State one disadvantage of the roofing material used on the farm structure (1 mk)
d). State two ways in which the structure is made ready for grain storage (2 mks)

20. The diagram below shows a calf presentation during parturition



a). Name the presentation labelled M and N
b). Which one of the presentations requires the services of a qualified stockman (1 mk)
c). State two signs of parturition observed on the vulva (2 mks)

SECTION C (40 MARKS)

ANSWER ANY TWO QUESTIONS IN THE SPACES PROVIDED

21. a). Describe milk fever disease under each of the following sub – headings
    i). Cause (1 mk)
    ii). Animal attacked (1 mk)
    iii). Symptoms of infection (5 mks)
    iv). Control measures (3 mks)

b). Explain the management practices that a farmer should carryout to improve milk production in a low yielding herd of dairy cattle under the following sub – headings. (10 mks)
    i. Selection (2 mks)
    ii. Parasite and disease control (2 mks)
    iii. Feeding (2 mks)
    iv. Housing (2 mks)
    v. General management practices (2 mks)

22. a). Describe the working mechanism of a four – stroke cycle engine. (10 mks)
    b). Explain five factors that should be considered when siting a farm store (5 mks)
    c). State five differences between ruminant and non – ruminant digestive systems (5 mks)

23. a) Describe the management of one day old chicks in a brooder until they are eight weeks old (layer chicks) (12 mks)
    b). i) Name four milk products (2 mks)
    ii). Explain six problems affecting the marketing of milk in Kenya (6 mks)

MURANGA SOUTH
443/1
AGRICULTURE
TIME: 2 HOURS
SECTION A

Marking Scheme

Section A (30 marks)

4. Name three forms of horticulture practiced in Kenya. (1 ½ mks)
   Olericulture
   Pomoculture
   Floriculture (3X ½ = 1 ½ mks)
5. State three disadvantages of small scale farming (1 ½ mks)
   Uneconomical to mechanize
   Low production
   Difficult to specialize
   Labour intensive
6. a). State four reasons for land preparation (2 mks)
   Kill weeds
   Incorporate manure and other organic matter
   Destroy different stages of crop pests
   Aerate the soil
   Encourage root penetration
   Make subsequent operations possible
   Encourage water infiltration (4X ½ = 2mks)

b). Name two implements that can be used to carry out sub – soiling (1mk)
   Sub – soilers
   Chisel ploughs
   Cultivators (2X ½ = 1mk)

7. State four ideal characteristics of plant used to make green manure.(2 mks)
   Highly vegetative
   Fast growth rate
   High nitrogen content
   Capable of rotting quickly
   Be hardy (4X ½ = 2mks)
8. a). What is opportunity cost (1mk)
   Value of best foregone alternative (1X1=1mk)

b). Give three instances when opportunity cost does not exist (1 ½ mks)
   Where there are no alternatives
   When resources are not limited
   When resources are given for free (3X ½ = 1 ½ mks)

9. Give four reasons why farmers may choose seeds over vegetative materials during planting.
   Easy to treat against soil borne pests and diseases
   Not bulky / easy to store
   Easy to handle during planting
   Easy to use machines i.e. planters and drillers
   Possible to apply manure and fertilizers together during planting
   Possible to develop new crop varieties due to cross pollination (4X ½ = 2mks)
10. Outline four ways of controlling damping off disease on vegetable seedling in a nursery .
   Reduce / remove shade
   Remove overcrowding by thinning
   Reducing amount and frequency of watering
   Spraying with copper / appropriate fungicides (4X ½ = 2mks)

11. State four management practices in intensive hedge grow agroforestry
Cutting back / coppicing
Irrigation during dry season
Protection
Weeding
Fertilizer application (4X ½ = 2mks)

12. Name four types of market structures in agricultural marketing (2 mks)
Monopoly
Oligopoly
Monopsony
Perfect market (4X ½ = 2mks)

13. State two limitations of tissue culture in crop production. (2 mks)
Requires highly skilled manpower
Requires special structures where humidity and temperature can be controlled
It's expensive (2X1=2mks)

14. Differentiate between the following terms

i. Over – sowing and undersowing (2 mks)
Over – sowing – introduction of a pasture legume in an existing grass pasture WHILE under sowing is establishment of a pasture under a cover crop, usually maize. (2X1=2mks; Mark as a whole)

ii. Seed dressing and seed inoculation (2 mks)
Seed dressing – coating of seeds with an insecticide or a fungicide or a combination of both to prevent attack by soil borne pests and diseases WHILE seed inoculation is coating leguminous seeds with right strain of rhizombium bacteria to promote nodulation (2X1=2mks; Mark as a whole)

15. State four practices carried out during harvesting of beans (2 mks)
Uprooting dry beans
Spreading on mats or sacks
Threshing
Winnowing
Sorting (4X ½ = 2mks)

16. Name three biological weed control methods (1 ½ mks)
Use of weed eating fish
Use of livestock
Use of moths (3X ½ = 1 ½ mks)

17. State four parameters that can be used to measure the economic development of a country. (2 mks)
National income
Per capita income
Level of technology
Literacy level
Gender parity (4X ½ = 2mks)

SECTION B (2O MARKS)

18. The diagram below illustrates an investigation on a property of soil samples labelled J, K & L

a). If the levels of water shown in the diagram were observed after three hours, name the property of soil being investigated. (1 mk)
Soil capillarity

b). What is the relationship between the soil property named in (a) above and the size of soil particles?
The smaller the size of the particles the greater the force of capillarity

c). Which soil sample would be suitable for growing paddy rice. (1 mk)
Soil labelled L

d). Give two characteristics of soil J (2 mks)
Well drained
Coarse textured
Moderate fertility

Slightly acidic
Low water holding capacity
Low capillarity
Prone to erosion (2X1 = 2mks)

19. a). Distinguish between straight and compound fertilizer (1 mk)
Straight – supply only one of the fertilizer element
Compound – supply two or three fertilizer elements

b). A farmer applied 200kg of CAN (21%N) and DSP 150kg (40% P_2O_5) per hectare on his five hectares maize crop. Calculate the amount of Nitrogen and phosphorus the farmer applied on his crop. Show your working (4 mks)

i. CAN
100kg CAN = 21 kg N
200kg CAN = $\frac{200 \text{ X } 21}{100}$
= 42kg N/Ha
5Ha = 42 X 5 = 220kg N

ii. DSP
100kg DSP = 40kg P_2O_5
150kg DSP = $\frac{150 \text{ X } 40}{100}$
= 60kg P_2O_5 /Ha
5 Ha = 60 X 5 = 300kg P_2O_5

20. Below is a graphical representation of a law in agricultural economics. Study the graph carefully and answer the questions that follow.

a). Identify the law illustrated by the graph. (1 mk)
Law of diminishing returns (1X1 =1mk)

b). Explain how each additional unit of fertilizer input relates to the total output of maize in phases II and III. (2 mks)
Phase II – Each additional unit of fertilizer input leads to lower increase in total output of maize than the previous unit of fertilizer input.
Phase III – Each additional unit of fertilizer input leads to a decrease in total output of maize.

c). State the importance of the law identified in (i) above to the maize farmer. (1 mk)
Helps the farmer to identify the level of optimum fertilizer application in the production of maize to determine the highest level of maize output. (1x1= 1mk)

d). Name the irrational phase of operation (1 mk)
Phase I / Phase III (1X1= 1mk)

21. The diagram below shows a method of budding

a). Identify the method of budding
T – budding

b). Name two other methods of budding apart from one illustrated (2 mks)
Patch budding
Top budding

c). Give two advantages of budding in crop production
Plants with desirable root characteristics but with undesirable products is utilized i.e. Lemon – orange graft
Facilitates changing of the top from undesirable to desirable
Possible to grow more than one type of fruit / flower on same plant
Propagate clones that cannot be propagated in any way
Help to shorten the maturity age.

SECTION C (40 MARKS)

22. a). Describe five biotic factors that influence agricultural production (5 mks)

i. Pest – lowers quality and quantity
Transmit crop diseases
Injure plant parts exposing to secondary infection
Lead to rotting of produce

ii. Parasites – suck blood
Irritate by biting

iii. Decomposers – lead to decomposition

iv. Predators – feed on pests

v. Pathogens – transmit diseases

vi. Pollinators – lead to cross pollination

vii. Nitrogen fixing bacteria – convert nitrogen from air into nitrates (5X1= 5mks)

b). Explain five reasons for draining water – logged soils (5 mks)

i. Increase aeration – excess water retards plant growth because it fills the air spaces

ii. Increases soil volume – amount of soil around the root zone which easily gets nutrients

iii. Raise soil temperature – improves rate at which warms up for better plant growth

iv. Increase microbial activities – improve soil structure and make plant food more readily available

v. Reduce soil erosion – well drained soil have high water holding capacity reducing surface run – off and increase infiltration

vi. Remove toxic substances – water logging soluble salts increases toxic levels, drainage removes salts (5X1 = 5mks)

c). Explain four factors considered when selecting planting materials (4 mks)
Select materials suitable to ecological conditions of the area. Each will grow well and produce high yields
Purity of the materials – select not mixed with other on – types. Low seed rate will be used for pure seeds
Germination percentage – select seeds with high germination percentage which uses low seed rate
Certified seeds – select certified seeds which have 100% germination; free from pests and diseases and high yields. (4X1 = 4mks)

d). Describe the harvesting of tea (6 mks)
Leaves are picked selectively for highest quality
Pluck top two leaves and a bud
Use a plucking stick to maintain the plucking table
Pluck 5 – 7 days intervals in rains and 10 – 15 days in dry periods
Put plucked tea in woven baskets to facilitate air circulation / prevent fermentation
Do not compress the leaves to prevent heating up / browning
Put plucked tea leaves in cool and shaded place
Deliver to the factory on the same day (6X1 = 6mks)

23. a). Give five reasons why late defoliation is discouraged in pasture utilization (5 mks)
High DM yield
High cellulose content (woody and fibrous)
High lignin, cutin all indigestible
Low crude protein content
Low leaf : stem ratio
Low dry matter digestibility (5X1 = 5mks)

b). Describe ten harmful effects of crop pests (10 mks)
Transmit diseases
Feed on whole / part of plants
Some unearth planted seeds
Deprive the plant off food by sucking sap
Lower the quality of flowers, fruits, berries
Eat growing points causing stunted growth

Feed on whole / part of seeds lowering germination percentage
Lower the yield expected
Cause wilting of plants by feeding on roots
Reduce surface area for photosynthesis
Chemical pest control / measures affects the environment
Cause injuries that lead to secondary infection
Increase the cost of production during control

c). Describe five methods used in water harvesting (5 mks)
Uses of dams – barriers constructed across a river or valley to accumulate / hold water
Uses of weirs – constructed across a river to raise the water level and allows water to flow over
Use of ponds – natural / artificial depression which accumulates water
Roof catchment – rain water from roof tops into gutters into tanks
Wells – holes dug into ground below water table where water collects
Rock catchment – barriers constructed around a large rock where water is collected directed in to tanks / reservoir
Micro – catchment – ditches designed to concentrate run – off water around growing crops
Retention ditches / level terraces – trenches that accumulate surface run – off (5X1 = 5mks)

24. a). Describe five post – harvesting management practices carried out on various crops(10 mks)
Threshing / shelling – done manually or use of machine. Facilitates cleaning and subsequent storage
Drying – dried in the sun or artificial driers to reduce moisture to prevent rotting or fungal attack
Cleaning – by winnowing to remove chaff
Sorting and grading – done according to quality freshness or size to enable buyers preference
Dusting – appropriate chemicals are applied in form of dust powder to prevent storage pests
Processing – taken to factory to improve flavor keeping quality or reduce bulkiness to final products
Packaging – placing into containers to reduce damage and make it easy to quantity and set prices
(Stating 5X1 = 5 mks)
(Explanation 5X1 = 5 mks)

b). Discuss carrots production under the following sub – headings

i). Field management practices (3 mks)
Thinning – done two weeks after germination to attain distances of 3 – 4 cm between plants within rows
Weeding – keep field weed free. Earthed up around the roots to encourage root expansion
Top dressing – after weeding apply 60kg N/Ha (3X1 = 3mks)

ii. Land preparation (3 mks)
Seedbed should be well dug to a depth of 20cm
Harrowed to a fine tilth
Manure should not be applied as it induces forking (3X1 = 3mks)

c). State four advantages of communial land tenure system (4 mks)
Problems of landlessness does not exist
Land cannot easily be fragmented
Allows free movement of livestock
Land is left to rest allowing pasture regeneration
Elders help to solve any local problems thus there are no land disputes (4X1 = 4mks)

MURANGA SOUTH
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AGRICULTURE
SECTION A

Marking Scheme

SECTION A (30 MARKS)

1. State four reasons for maintaining farm tools and equipment
   Ensure efficiency
   Make them durable
   Reduce replacement costs
   Avoid injury to the user
   Avoid damage to the tool
2. Give the meaning of the following terms as used in livestock health

a). Predisposing factor – conditions outside the animal body which make it to contract a disease

b). Incubation period – duration between the time of infection to time the first symptoms show up

3. State four practices that come immediately after complete milking in a milking shed.
   Teat dipping to control mastitis
   Weigh and record milk yield
   Sieve / strain / filter milk
   Application of milking jelly
   Store milk in a cool place
   Clean milk shed
   Clean milking equipment
   Release the animal
4. List four preventive measures of livestock diseases (2 mks)
   Vaccination
   Proper feeding
   Quarantine imposition
   Use of prophylactic drugs
   Proper hygiene
   Treatment of sick animals
   Proper selection and breeding
   Control of vectors
   Slaughtering and proper disposal of infected animals
5. List four materials that can be used in construction of Kenya Top Bar Hive (2mks)
   Timber
   Plain wire
   Nails
   Iron sheets
6. State two control measures of keds in sheep (1 mk)
   Shearing
   Routine dipping / spraying
   Proper hygiene
7. State the functional difference between the following

a). Cross cut saw and rip saw (1 mk)
   Cross – cuts across the grains of wood
   Rip – cuts along the grains of wood

b). Wood chisel and cold chisel (1 mk)
   Wood chisel – cutting glooves
   Cold chisel – cutting sheets of metal

8. State four microbial activities that occur in the rumen (2 mks)
   Food fermentation
   Synthesis of vitamin (K & B complex)

Synthesis of amino acids
Breakdown of proteins to peptides, amino acids and ammonia
Breakdown of cellulose and carbohydrates to carbon dioxide and volatile fatty acids

9. Name four beef cattle breeds (2 mks)
Hereford
Galloway
Aberdeen Angus
Beef short horns
Charolais

10. Give four signs of heat in cattle (2 mks)
Restlessness
Frequent mooing / bellowing
Frequent urination
Jelly – like mucus discharge
Mounting on other animals
Stand still when mounted
Drop in milk production
Loss of appetite

11. Name four notifiable diseases of livestock (2 mks)
Rinderpest
Anthrax
Rift Valley Fever
Foot & mouth disease
Rabies
Newcastle
Mad cow disease
Black quarter
Lumpy skin disease

12. State four signs of stress in a flock of chicken (2 mks)
Unusual noise
Crowding at one point
Hiding under structures
Alertness towards a certain direction
Poor feeding
Reduction in egg production

13. State four advantages of a two – stroke cycle engine (2 mks)
Less fuel consumption
Enables carrying out light tasks
Has low maintenance cost
Cheap to buy

14. State four conditions that causes swarming in bees (2 mks)
Sick or infertile queen
Damage to the brood
Absence of food and water
Disease and pest outbreak
Congestion in the hive
Unfavourable weather

15. State four visible symptoms of round worm infestation in cattle (2 mks)
Emaciation / reduced body weight
Diarrhea
Blood stained dung
Pot bellies
Presence of worms in dung

Reduced growth rate / retarded growth
Coughing

16. Differentiate between a broiler and a capon (1 mk)
Broiler – bird kept for meat
Capon – is a castrated / sterilized male bird

SECTION B (20 MARKS)

17. The diagram below is an illustration of an egg. Study it carefully and answer the questions that follow.
a). Name the parts labelled B, C, D and F (2 mks)
B – inner shell membrane
C – outer shell membrane
D – albumen / egg white
F – chalazae

b). State two qualities of the part labelled A that should be considered when selecting eggs for incubation (2 mks)
Smooth texture
Absence of cracks
Cleanliness / absence of blood stains
Oval in shape

c). What is the function of the part labelled E in a fertilized egg? (1 mk)
Provide nutrients for the development of embryo / chick

18. The diagram below illustrates an external parasite of livestock

a). Identify the parasite (1 mk)
Tick

b). Apart from eggs and adults, name two other developmental stages of the parasite illustrated above.
Larvae
Nymph

c). Name two livestock diseases transmitted by the illustrated parasite (1 mk)
East coast fever
Heart water
Red water
Tick bite disease
Corridor disease
Nairobi sheep disease
Anaplasmosis
Sweating disease

d) Explain two ways in which the environment is altered to control the parasite illustrated above(2 mk)
Ploughing infested pastures
Burning infested pastures
Top dressing using lime or acaricides

19. The diagram below shows a farm structure for storing grains

a). Identify the farm structure (1 mk)
Traditional granary

b). State the function of the part labelled L (1 mk)
Prevent entry of rats / rodents into store

c). State one disadvantage of the roofing material used on the farm structure (1 mk)
Prone to damage by insects
Fire risk
Less durable

d). State two ways in which the structure is made ready for grain storage (2 mks)
Cleaning
Dusting
Cleaning vegetation around

Repairing / worn out / broken parts
Replacing broken parts

20. The diagram below shows a calf presentation during parturition

a). Name the presentation labelled M and N
M – Normal
N – Breech / mal – presentation

b). Which one of the presentations requires the services of a qualified stockman (1 mk)
N / Breech / mal – presentation

c). State two signs of parturition observed on the vulva (2 mks)
Enlarged / swollen vulva
Clear mucus discharge

SECTION C (40 MARKS)

21. a). Describe milk fever disease under each of the following sub – headings

i). Cause (1 mk)
Low calcium level in the blood / high milk yield without calcium replenishment

ii). Animal attacked (1 mk)
Goats, pigs, sheep, cow

iii). Symptoms of infection (5 mks)
Dullness
Body functions stop i.e. urination, defecation, milk secretion
Stomach content are drawn to the mouth causing lung fever
Complete loss appetite
Muscular twitching
Walking in staggering manner
Animal lies down on its side most of the time
Animal lies on sternum with head twisted on one side
General paralysis / inability to move or arise
Breathing becomes slow & weak
Stiffening of the whole body
Head turned back
Animal fall down and become unconscious
Sudden death (1X5 = 5mks)

iv). Control measures
Feed animals on diet / mineral salts rich in calcium
Give intra – muscular injection of calcium and phosphorus 2 – 3 days before calving down
Partial milking on known cases
Cull susceptible animals (1X3 = 3 mks)

b). Explain the management practices that a farmer should carryout to improve milk production in a low yielding herd of dairy cattle under the following sub – headings. (10 mks)

i. Selection
Select high yielding cows
Good health
High fertility
Conformation
Temperament / docile
Cull poor animals
Be continuous process (selection & culling)

ii. Parasite and disease control (2 mks)
Routine vaccination
Spraying using appropriate chemicals
Routine drenching / using appropriate dewormers
Treat sick animals

Isolate sick animals & put under quarantine
Avoid sharp objects / holes to avoid physical injuries
Improve sanitation / cleanliness

iii. Feeding (2 mks)
Feed on balanced ration
Give adequate feed
Feed free / clean from contamination
Provide minerals and vitamins

iv. Housing (2 mks)
Proper housing / ventilation
Avoid overcrowding

v. General management practices (2 mks)
Milk at regular intervals
Observe closely heat signs and signs of diseases
Handle animals properly
Keep proper & good records
Evaluate the herd

22. a). Describe the working mechanism of a four – stroke cycle engine.(10 mks)

Induction: / Intake stroke (2 mks)
Piston moves down the cylinder
Inlet valve open drawing fuel – air mixture into cylinder

Compression stroke (2 mks)
Inlet valve closes and exhaust valve closes
Compresses fuel / air mixture in the combustion chamber

Power stroke (3 mks)
Inlet valve and outlet valve closes
Spark produced by spark plug
Causes the fuel mixture to ignite and expand resulting in pressure that forces the piston to move down the cylinder

Exhaust stroke (3 mks)
Exhaust valve opens while inlet valves closes
Piston moves up the cylinder to eliminate the burnt fuel mixture

b). Explain five factors that should be considered when siting a farm store (5 mks)
Accessibility - easily reached from most parts of the farm
Drainage – well drained to avoid dampness
Security – secure from predators and thieves
Relationship with other structures – close to other related structures to save time and labour
Proximity of amenities – near water / electricity supply
Topography – gentle sloping to save cost of levelling / facilitate drainage.

c). State five differences between ruminant and non – ruminant digestive systems (5 mks)

Ruminants	Non – ruminants
Chew the cud	Do not chew cud
Four chambered stomach	One stomach
Regurgitates food	Doesn't Regurgitates
Can digest cellulose	Cannot digest cellulose except with caecum
Lack ptyalin in saliva	Have ptyalin in saliva
Have alkaline saliva	Saliva is neutral
Digestion and absorption mainly occur in the rumen	Occurs in the small intestine

NB// Mark as a whole

23.a) Describe the management of one day old chicks in a brooder until they are eight weeks old (layer chicks) (12 mks)

On arrival, supply water mixed with glucose
Feed chicks on fresh chick mash
Clean feeders before feeding
Clean waterers before feeding
Provide adequate feeders & waterers as per age
Vaccinate chicks against gumboro after 2 weeks
Dust chicks & brooder with appropriate chemicals
Provide clean water
Provide adequate feed
Check and adjust brooder temperature
Provide coccidiostats in water / feed to control coccidiosis
Vaccinate against Newcastle at 3 – 4 weeks, fowl typhoid at 7 weeks
Dim lightly to prevent pecking
Introduce roosts from 6^{th} week
Provide grit from 6^{th} week
Debeaking
Control internal parasites – deworming
Gradually introduce growers mash from 7^{th} week
Isolate and treat sick chicks
Properly dispose dead chicks
Keep proper records

b). i) Name four milk products (2 mks)
Homogenized milk
Pasteurized milk
Utra – heat treated milk (UHT)
Butter
Skimmed milk
Ghee
Powdered milk
Yoghurt

ii). Explain six problems affecting the marketing of milk in Kenya (6 mks)
Storage – its perishable hence be refrigerated or sold immediately
Poor means of transport
Price fluctuations
Delayed payments
Lack of enough storage facilities
Lack of market information
Exploitation by middlemen
Variation of seasons leading to overproduction and supply

MURANGA SOUTH PRE
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AGRICULTURE
PAPER 1
TIME: 2 HOURS

SECTION A (30 MARKS)
Answer ALL the questions in section

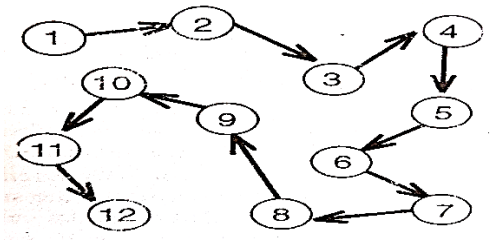
1. State four problems associated with nomadic pastrolism in Kenya. (2 mks)
2. State two benefits of optimum soil temperature in crop production (1 mk)
3. State three ways by which biological agents can enhance the process of soil formation. (1 ½ mks)
4. Give three reasons for early seedbed preparation (1 ½ mks)
5. State four factors that determine the depth of cultivation. (2 mks)
6. Give four conditions which make it necessary to carry out irrigation. (2 mks)
7. Give four characteristics of a productive soil. (2 mks)
8. State four reasons why a farmer should avoid nitrogen fertilizers in tomato production.
9. Outline four qualities of a good mother plant from which vegetative propagation materials should be obtained. (2 mks)
10. Give four reasons for constructing a shade over a nursery bed (2 mks)
11. Mention four factors that determine a stage at which a crop is harvested. (2 mks)
12. Give two ways in which cover crops helps to conserve water in the soil (1 mk)
13. Mention four factors that contribute to the competitive ability of weeds. (2 mks)
14. a). What is land reforms (½ mk)
    b). Give three land reforms practiced in Kenya (1½ mks)
15. Identify four ways in which crop pests are classified. (2 mks)
16. a). State two pasture legumes grown in medium altitude areas (1 mk)
    b). State four benefits of conserving forage (2 mks)

SECTION B (20 MARKS)
Answer ALL the questions in section

17. The diagram below shows a farm record kept by a dairy farmer.

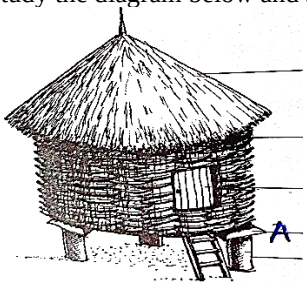
DATE	COMMODITY/ITEM STOCK	QUANTITY	WRITTEN OFF	BALANCE IN	COMMENT

    a). Identify the record (1 mk)
    b). Give four reasons why farmers keep records (4 mks)
18. The diagram below shows a procedure of carrying out a field practice.



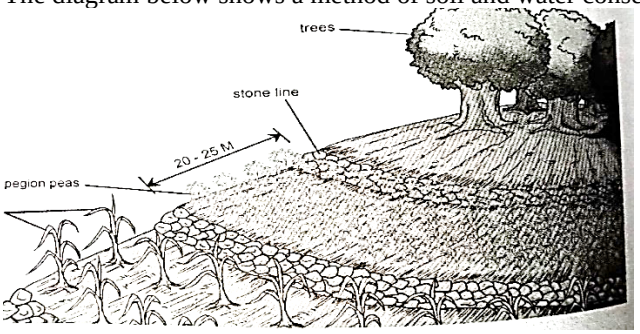
    a). Identify the method in the diagram above. (1 mk)
    b). Explain the procedure of carrying out the above practice (4 mks)

19. Study the diagram below and answer the questions that follow.



a). Identify the structure (1 mk)
b). Give one function of part labeled A (1 mk)
c). State three structural requirements of the above structure. (3 mks)

20. The diagram below shows a method of soil and water conservation



a). Identify the structure shown above (1 mk)
b). Give two other structures that can be used in place of the one in (a) above (1 mk)
c). Give six factors that influence soil erosion (3 mks)

SECTION C (40 MARKS)

Answer any two questions in section

21. a). Describe transplanting of tomato seedlings (7 mks)
b). Describe production of maize under the following subheadings
i). Seedbed preparation (3 mks)
ii). Planting (4 mks)
iii). Harvesting (3 mks)
c). State three effects of crop diseases (3 mks)

22. a). Describe six cultural methods of soil and water conservation (6 mks)
b). Describe ten safety precautions that should be taken when using herbicides in weed control
c). give four effects of strong wind in crop production (4 mks)

23. a). Describe how water is treated to remove solid impurities (5 mks)
b). Explain seven factors that influence seed rates in crop production (7 mks)
c). Describe four human factors influencing agriculture (8 mks)

MURANGA SOUTH PRE
443/2
PAPER 2
TIME: 2 HOURS

SECTION A (40 MARKS)

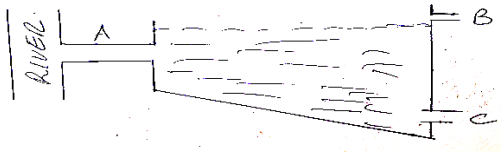
Answer ALL the questions in sections

1. Name four features of large white breeds of pigs (2mks)
2. State four adaptation of camel to its environment (2mks)
3. List two equipment used in handling cattle during an agricultural extension. (1mk)
4. State four reasons for keeping dairy cattle healthy (2mks)
5. State four indicators four external parasites infestation in lambs (2 mks)
6. State four factors that determine the amount of water required by an animal (2 mks)
7. Outline four advantages of artificial insemination in cattle management (2mks)
8. State the gestation period of the following farm animals (2mks)
   i). pigs
   ii). Rabbits
   iii). Cattle
   iv). Goats
9. State four ways of administering vaccines on an animal (2 mks)
10. Give six routine management practices carried out in a crush (3mks)
11. List six qualities of egg suitable for incubation (3mks)
12. Give four advantages of artificial calf rearing (2mks)
13. Identify four clean sources of power on the farm (2 mks)
14. Give four advantages of using animals as a source of power instead of a tractor. (2 mks)
15. State two main factors that lead to low egg production in a flock of layers. (1 mk)

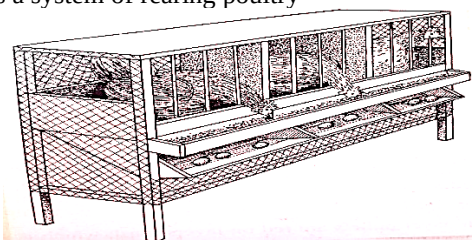
SECTION B(20 MARKS)

Answer ALL the questions in sections

16. A dairy farmer required to prepare 200 KG of dairy meal containing 20% D.C.P. Available feedstuff were soya bean meal 40% D.C.P. and maize 10% D.C.P. Use Pearson's Square method to calculate the amount of each feedstuff used. Show your working. (5 mks)
17. The diagram below shows a cross section of a fish pond

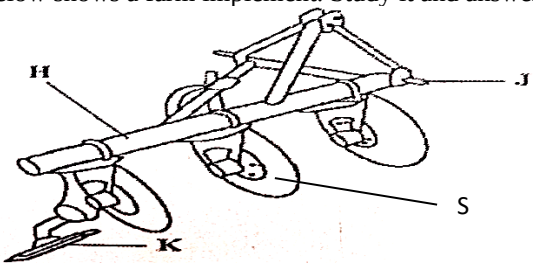


   a). Name the parts labeled A, B and C. (1 ½ mks)
   b). Give one function of part B (1 mk)
   c). Give one reason why a pond should have a deep end. (1 mk)
   d). Explain how fingerings are introduced in a fish pond. (1 ½ mks)
18. The diagram below shows a system of rearing poultry



   a). Identify the system (1 mk)
   b). Give four advantages of the above system. (2 mks)
   c). Mention four factors to consider when sorting and grading eggs for market. (2 mks)

19. The diagram below shows a farm implement. Study it and answer the questions that follow.



a). Identify the implement (1mk)
b). Name parts labeled H, J, K and S. (2 mks)
c). Give two reasons why the above implement is suitable in hard soils (2 mks)

SECTION C (40 MARKS)

Answer any TWO questions in this section

20. a). Describe Newcastle disease under the following sub – headings
i). Causal organisms (1 mk)
ii). Signs of infection (7 mks)
iii). Control measures (3 mks)
b). Explain four requirements of artificial incubation. (8 mks)

21. a). Describe management practices that ensure clean milk production. (10 mks)
b). Describe five differences between petrol and diesel engines. (10 mks)

22. a). List five factors considered when formulating livestock ration (5 mks)
b). Describe seven management practices a farmer should carry out to control parasite infestation in livestock. (7 mks)
c). Describe eight signs of ill – health in livestock. (8 mks)

MURANGA SOUTH PRE
AGRICULTURE
PAPER ONE
SECTION A (30 MARKS)

1. State four problems associated with nomadic pastoralism in Kenya. (2 mks)
- Livestock parasites and disease due to common grazing field
- Difficult to control breeding
- Difficult to control breeding diseases
- Low production of both meat and milk
- Conflicts among communities
- Soil erosion (4 x ½ = 2 mks)

2. State two benefits of optimum soil temperature in crop production (1 mk)
- Enhances seed germination
- Promotes soil microbial activities
- Improves quality of crop products
- Enhances vigorous growth and development
- Enhances high yields (4 x ½ = 2 mks)

3. State three ways by which biological agents can enhance the process of soil formation. (1 ½ mks)
- Roots of growing plants exert pressure on rocks and it breaks
- Large animals e.g. elephants, cattle move and they disintegrate rocks
- Man's activities e.g. minig reduces the rock in to smaller particles
- Earthworms feed on plant tissues and their waste matter help to cement soil particles together (3 x ½ = 1 ½ mks)

4. Give three reasons for early seedbed preparation (1 ½ mks)
- Allow time for organic matter to decompose and form humus
- Facilitates timely subsequent operations
- Allow time for weeds to die / decompose
- Allow weathering of soil clods
- Minimizes competition for labour
- Allow air penetration / gaseous exchange
- Allow pests and diseases causing organisms to die
- Allow water infiltration (3 x ½ = 1 ½ mks)

5. State four factors that determine the depth of cultivation. (2 mks)
- Soil moisture content
- Soil type
- Size of planting materials
- Type of germination
- Type of crop / deep-rooted / shallow rooted (4 X ½ = 2 mks)

6. Give four conditions which make it necessary to carry out irrigation. (2 mks)
- Increases yield / steady supply of food throughout the year
- Reclamation of arid and semi – arid areas
- Source of employment if used extensively
- Promote production of crops for export
- Allow production of paddy rice
- Allow growing of crops in green houses
- Supplements – rainfall / during dry periods
- Allow fertigation of crops (4 x ½ = 2 mks)

7. Give four characteristics of a productive soil. (2 mks)
- Proper depth
- Well aerated
- Good water holding capacity

- Well drained
- Absence of soil – borne pests / diseases
- Appropriate soil pH (4 x ½ = 2 mks)

8. State four reasons why a farmer should avoid nitrogen fertilizers in tomato production. (2 mks)
   - o May lead to blossom end rot in tomatoes
   - o Leads to delayed maturity
   - o Cracking of fruits in tomatoes
   - o Excessive vegetative growth at expense of fruits
   - o Excess is lost through volatilization and leaching (4 x ½ = 2 mks)
9. Outline four qualities of a good mother plant from which vegetative propagation materials should be obtained. (2 mks)
   - ▪ Disease / pest resistant
   - ▪ High yielding
   - ▪ Healthy
   - ▪ Fast growth / early maturity
   - ▪ High quality yields
   - ▪ Well adapted to the environment (4 x ½ = 2 mks)
10. Give four reasons for constructing a shade over a nursery bed (2 mks)
    - ❖ Protect seedlings from heavy rainfall
    - ❖ Reduces water loss by evaporation
    - ❖ Protect seedlings from sunlight
    - ❖ Protect from damage by wind (4 x ½ = 2 mks)
11. Mention four factors that determine a stage at which a crop is harvested. (2 mks)
    - ➢ Intended use of crop
    - ➢ Chemical concentration of the produce / change in color
    - ➢ Prevailing weather conditions
    - ➢ Market demand for the produce / market price (4 x ½ = 2 mks)
12. Give two ways in which cover crops helps to conserve water in the soil (1 mk)
    - Reduce speed of run off
    - Intercepts the impact of rain drops
    - Hold soil particles together / traps eroded soil
    - Improves infiltration of water
    - Reduces evaporation (4 x ½ = 2 mks)
13. Mention four factors that contribute to the competitive ability of weeds. (2 mks)
    - Produces large quantities of seeds
    - Seeds remain viable for a long time
    - Effective mechanism of dispersal
    - Weeds have ability to propagate vegetatively
    - Have elaborate root system
    - Some have underground structure difficult to control
    - Able to survive with limited nutrients
    - Able to compress their life cycle
    - Some weeds are allelopathic effect (4 x ½ = 2 mks)
14. a). What is land reforms (½ mk)
    - o Any organized actions taken to improve structure of land tenure and land use (½ mk)

    b). Give three land reforms practiced in Kenya (1 ½ mks)
    - ❖ Land tenure reforms
    - ❖ Land consolidation
    - ❖ Land subdivisions
    - ❖ Land adjudication and registration
    - ❖ Land settlement
    - ❖ Land resettlement (1 ½ mks)

15. Identify four ways in which crop pests are classified. (2 mks)

- Mode of feeding
- Crop attacked
- Stage of development of pests
- Stage of growth of crop attacked
- Scientific classification
- Level of damage
- Place where found / habitat (4 x ½ = 2 mks)

16. a). State two pasture legumes grown in medium altitude areas (1 mk)

- Lucerne
- Silver leaf desmodium
- Green leaf desmodium
- Siratro
- Stylo (2 x ½ = 1 mk)

b). State four benefits of conserving forage (2 mks)

- Provide feed during time of scarcity
- Ensures better and proper utilization of land
- Conserved forage can be sold for income
- To distribute available forage for livestock throughout the year (4 x ½ = 2 mks)

SECTION B (20 MARKS)

17. The diagram below shows a farm record kept by a dairy farmer.

a). Identify the record (1 mk)

✓ Permanent goods inventory

b). Give four reasons why farmers keep records (4 mks)

- Shows history of farm
- Guides farmer in planning and budgeting
- Detect losses and theft on the farm
- Share profit and losses among partners
- Help in settling disputes among heirs when the farmer dies without leaving a will
- Record whether business made a profit or loss
- Help in supporting insurance claims on death, theft or fire
- In assessment of income tax to avoid under taxation of over taxation
- Provide labor information e.g. terminal benefits
- Determine the value of the farm

18. The diagram below shows a procedure of carrying out a field practice.

a). Zigzag (1 mk)

b). Explain the procedure (4 mks)

i. Dig a hole 60 cm X 60 cm
ii. Separate top soil and subsoil. Mix topsoil with manure
iii. Cut open and remove seedling from the container / polythene sleeve
iv. Place the seedling with soil at the center of the hole
v. Cover the seedling with mixture of topsoil and manure at level it while in the sleeve
vi. Firm the soil at the base
vii. Protect seedling for one year.

19. Study the diagram below and answer the questions that follow

a). Identify the structure (1 mk)

❖ Traditional granary / granary (1 mk)

b). Give one function of part labeled A (1 mk)

▪ Keep off rats / mice from attacking stored grains (1 mk)

c). State three structural requirements of the above structure. (3 mks)

- Well ventilated

- Easy to load and offload
- Pest free
- Leak proof
- Well secured to minimize theft
- Cool condition to prevent overheating (3x1 = 3 mks)

20. The diagram below shows a method of soil and water conservation

a). Identify the structure shown above (1 mk)

- Stone line

b). Give two other structures that can be used in place of the one in (a) above (1 mk)

- Bund
- Cut off drains
- Trash line
- Terraces
- Gabions / porous dams
- Dams / reservoirs

c). Give six factors that influence soil erosion (3 mks)

- Amount and intensity of rainfall
- Slope of the land
- Type of soil
- Soil depth
- Vegetation cover
- Overstocking
- Deforestation
- Planting annual crops on steep slopes
- Indiscriminate burning of land
- Clean weeding
- Ploughing up and down slope

SECTION C (40 MARKS)

21. a). Describe transplanting of tomato seedlings (7 mks)

- They are ready when one month old, 4 – 6 true leaves or 10 – 15 cm in height
- Water nursery thoroughly 3 – 4 hours before transplanting
- Use a garden trowel to lift seedlings / lift seedlings with ball of soil around roots
- Select healthy and vigorous growing seedlings
- Transport seedlings carefully / use a wheelbarrow
- Transplant in cool weather / early morning / late evening
- Transplant the same depth as it was in nursery
- Firm soil at the base
- Apply a light mulch, water and shade where necessary (7x1=7 mks)

b). Describe production of maize under the following subheadings

i). Seedbed preparation (3 mks)

- Clear the land using slasher, panga
- Deep digging to remove perennial weeds
- Harrow into medium tilth
- Prepare the land early before the rains

ii). Planting (4 mks)

- Plant at onset of rains
- Dry planting can be done
- Depth of planting 2.5cm – 10cm
- Spacing 75cm – 90cm X 20cm – 30cm
- Planting in furrows or holes
- 1 – 2 seeds per hole
- Mix phosphatic fertilizer and organic manure

- 100 – 150 kg DSP fertilizer per hectare
- Hand planting or use of tractors drawn planters (4x1=4 mks)

iii). Harvesting (3 mks)

- Crops ready 3 – 9 months depending on altitude and variety planted
- Harvesting when dry / moisture content 12% – 20%
- Cut stalk and stoking to allow crop to dry.
- Dehusking / removing cobs by hand
- Harvesting can be done by combine harvesters

c). State three effects of crop diseases (3 mks)

- They lower crop yield
- Cause production of low quality produce
- Cause food poisoning e.g. aflatoxin
- Increases the cost of production

22. a). Describe six cultural methods of soil and water conservation (6 mks)

- Grass / filters strip – reduce speed of flowing water / filter eroded soil
- Cover cropping – prevent surface flow / reduce impact of rains drops / reduce evaporation / volatilization
- Contour farming – create ridges on soil which hold water / reduce speed of run off
- Mulching – reduce impact of rain drops / prevent evaporation / prevent surface run – off
- Rotational grazing – allows grass to recover for soil and water conservation
- Crop rotation – maintains soil cover for protection against erosion / improves soil structure thus increasing infiltration
- Intercropping – provides adequate cover on the soil
- Strip cropping – the different strips reduce speed of run – off / filter soil
- Grassed / vegetated water ways – slows speed of water / trap eroded soil
- Agro forestry – stabilizes soil / canopy intercepts rain drops (6X1=6 mks)

b). Describe ten safety precautions that should be taken when using herbicides in weed control (10 mks)

- Wear protective clothing
- Avoid inhaling herbicides / don't smoke / spray along the wind
- Read manufacturers' instructions and follow them
- Avoid sucking / blowing nozzles
- Wash body thoroughly after handling chemical
- Store herbicides properly away from food and out of reach of children
- Clean equipment thoroughly
- Clean equipment away from water sources / pasture
- Empty containers and left over should be disposed properly
- Avoid herbicides drifting to unintended crops fields / water sources /spray in calm weather
- Avoid eating food before bathing (1x10=10 mks)

c). Give four effects of strong wind in crop production (4 mks)

- Increase the rate of evaporation of moisture from the soil
- Causing lodging in cereals and damage to crops
- Blowing away and bringing rain bearing clouds
- Acting as agent of seed dispersal
- Acting as agent of soil erosion
- Increasing evapotranspiration rate
- Increasing the spread of pest and diseases
- Destroy farm structure e.g. nursery
- Cooling effect (1x4=4mks)

23. a). Describe how water is treated to remove solid impurities (5 mks)

- Water passed through series of sieves with different sizes of holes to trap large materials
- Aluminum sulphate added to coagulate solid particles
- Water passed through a large circular coagulation tank to allow solid particles to settle

- ❖ Water passed through filtrate by sand particles to trap coagulated solid particles
- ❖ Layer of sand and ballast allow water to pass through slowly leaving all solid particles

b). Explain seven factors that influence seed rates in crop production (7 mks)

- o Intended use of crop /fodder crop uses higher seed rate
- o Germination percentage – high seed rate needed in seeds with low germination percentage
- o Method of planting – broadcasting require higher seed rate
- o Number of seeds per hole – 2 or more seeds per hole uses a higher seed rate
- o Soil fertility – fertile soil uses a higher seed rate because they are closely spaced
- o Spacing – wider spacing uses a lower seed rate
- o Seed purity – pure seeds uses lower seed rate
- o Growth habit of crop – spreading crops are planted wider spacing so lower seed rate
- o Pure / mixed strand – high seed rate for pure strand (7x1= 7mks)

c). Describe four human factors influencing agriculture (8 mks)

- Government policy – laws enacted by government to control production and marketing of produce
- Transport and communication – good means of transport ensures goods reach the market fast and prevent loss
- Cultural practices and religious beliefs – cultural practices and religious beliefs affect what people consume and produce
- Market forces – supply and demand affects marketing of agricultural produce
- Level of education and technology – high level of education ensures proper method of farming
- Health /HIV/AIDS/ill health – influence the production / ill health leads to low production.

MURANGA SOUTH PRE
PAPER 2
MARKING SCHEME
SECTION A (40 MARKS)

1. Name four features of large white breeds of pigs (2mks)
- Long body
- Broad and slightly dished snout
- White with blue body spots
- Upright ears

2. State four adaptation of camel to its environment (2mks)
Withstand high temperatures
- Can stay long without food and water
- Can resist tropical diseases
- Can survive on poor pastures
- Can walk long distances
- Paddy hooves enable not to sink on sand
- Long eye lashes preventing entry of sand

3. List two equipment used in handling cattle during an agricultural extension. (1mk)
- Halter
- Lead – stick

4. State four reasons for keeping dairy cattle healthy (2mks)
- Long economic and productive life
- Reduce production cost
- Produce quality products
- Do not spread diseases
- Maximum production

5. State four indicators four external parasites infestation in lambs (2 mks)
- Presence of wounds / sores
- Irritation / scratching
- Loss of hair / alopecia
- Anaemia
- Presence of developmental stages of parasites

6. State four factors that determine the amount of water required by an animal (2 mks)
- Ambient temperature / relative humidity
- Level of production / amount of work done
- Species of the livestock
- Weight / size / age
- Psychological status i.e. health / pregnancy
- Type of feed taken

7. Outline four advantages of artificial insemination in cattle management (2mks)
- Control breeding diseases and parasites
- Controls breeding
- Quick to obtain proven bull
- Easy and cheap to transport
- Semen of superior bull served to many cows
- Farmers cannot afford to buy superior bull
- Bull that cannot serve naturally can be used
- Prevents injuries from heavy bulls
- Semen can be stored for long
- Control inbreeding
- Useful research tool

8. State the gestation period of the following farm animals (2mks)

i). pigs - 3 months, 3 weeks, 3 days / 4 months

ii). Rabbits - 29 – 33 days

iii). Cattle - 270 – 285 days / 9 months

iv). Goats - 5 months / 150 days

9. State four ways of administering vaccines on an animal (2 mks)

- Injections
- Nose / inhalation
- Occulter / eyes
- Orally / mouth
- Cloaca

10. Give six routine management practices carried out in a crush (3mks)

- Replacing worn out parts
- Replacing broken parts
- Applying preservatives to prevent termite attack
- Firming when loose
- Repairing worn out parts

11. List six qualities of egg suitable for incubation (3mks)

- Fertilized
- Medium size
- Oval
- Not cracked
- Clean
- Free from abnormalities
- 5 – 10 days old
- Smooth shell

12. Give four advantages of artificial calf rearing (2mks)

- Keep accurate record of milk yield
- Easy to regulate amount of milk taken
- Cow produces milk in absence of calves
- Maintenance of high standard hygiene
- Possible to sell more milk

13. Identify four clean sources of power on the farm (2 mks)

- Man
- Wind
- Solar energy
- Farm animals
- Electricity
- Water

14. Give four advantages of using animals as a source of power instead of a tractor. (2 mks)

- Cheap to acquire
- Less skilled labor
- Used in small holdings / irregular shape
- Appropriate in very steep areas / forested

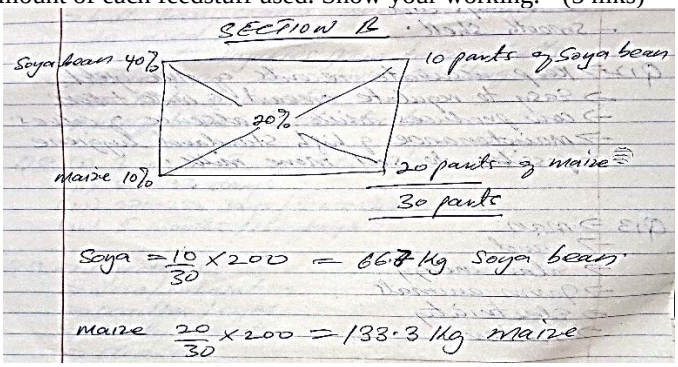
15. State two main factors that lead to low egg production in a flock of layers. (1 mk)

- Overcrowding
- Fighting / pecking / cannibalism
- Lack of adequate clean water
- Parasite infestation
- Old age
- Broodiness

- Egg eating
- Sudden change in feeds

SECTION B (20 MARKS)

16. A dairy farmer required to prepare 200 KG of dairy meal containing 20% D.C.P. Available feedstuff were soya bean meal 40% D.C.P. and maize 10% D.C.P. Use Pearson's Square method to calculate the amount of each feedstuff used. Show your working. (5 mks)



17. The diagram below shows a cross section of a fish pond

a). Name the parts labeled A, B and C. (1 ½ mks)

A – Inlet
B – Spillway / overflow pipe
C – Outlet

b). Give one function of part B (1 mk)

Allow excess water back to the river

c). Give one reason why a pond should have a deep end. (1 mk)

Allow breeding

d). Explain how fingerings are introduced in a fish pond. (1 ½ mks)

- Lower the container in the pond
- Tilt to allow water to flow inside
- Open to allow fingerings to swim against water flow

18. The diagram below shows a system of rearing poultry

a). Identify the system (1 mk)

- Battery cage

b). Give four advantages of the above system. (2 mks)

- Higher egg production
- Accurate records
- Cannibalism and egg eating is controlled
- Eggs are clean
- Easily mechanized
- No contamination of food and water
- Broodiness discouraged

c). Mention four factors to consider when sorting and grading eggs for market. (2 mks)

- Cleanliness
- Size of the eggs
- Candling quality
- Egg colours

19. The diagram below shows a farm implement. Study it and answer the questions that follow.

a). Identify the implement (1mk)

Disc plough

b). Name parts labeled H, J, K and S. (2 mks)

H – Beam

J – Lower link

K – Furrow wheel

S – Concave disc

c). Give two reasons why the above implement is suitable in hard soils (2 mks)

- Ride over obstacles e.g. stones / stumps
- Work well in sticky, non – scouring and black waxy soil

SECTION C (40 MARKS)

20. a). Describe Newcastle disease under the following sub – headings

i). Causal organisms (1 mk)

Virus

ii). Signs of infection (7 mks)

- Difficulties in breathing
- Beaks wide open and neck strained
- Dull
- Stand with eyes closed
- Loose appetite
- Nasal discharge
- Staggering motion
- Beaks and wings down
- Watery greenish diarrhea
- Eggs soft shelled

iii). Control measures (3 mks)

- No known treatment
- Kill and burn affected birds
- Disinfect and clean houses
- Vaccination
- Quarantine

b). Explain four requirements of artificial incubation. (8 mks)

- Temperature (37.5^0 C – 39.4^0 C)
- Fresh air / ventilation
- Relative humidity 60%
- Egg turning 45^0 C

21. a). Describe management practices that ensure clean milk production. (10 mks)

- Healthy milking herd
- Clean milking cows
- Healthy and clean milkman
- Clean milking utensils
- Milk filtration, cooling and storage
- Avoid flavours in milk

b). Describe five differences between petrol and diesel engines. (10 mks)

Petrol	**Diesel**
Carburetor	Injection pump
Fuel and air mixed in carburetor	Fuel and air mixed within cylinder
Ignited by an electric spark	Ignited by compression of air and fuel
Little smoke	A lot of smoke
Light in weight and for light duties	Heavy in weight and for heavy duteis

22. a). List five factors considered when formulating livestock ration (5 mks)

- Level of production

- Animal nutrient requirement
- Nutrient content available in feed stuff
- Cost of feed stuff
- Availability of feed stuff

b). Describe seven management practices a farmer should carry out to control parasite infestation in livestock. (7 mks)

a. Deworming / drenching
b. Good farm hygiene
c. Proper cooking of meat
d. Drain swampy areas / avoid grazing around swampy areas
e. Killing intermediate host
f. Clearing of bushes / ploughing / burning
g. Physical killing
h. Fencing of pasture land
i. Use of chemicals to kill the parasites
j. Rotational grazing
k. Proper feeding
l. Proper housing management
m. Protection of young ones

c). Describe eight signs of ill – health in livestock. (8 mks)

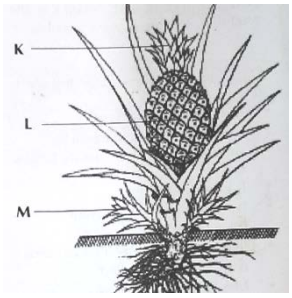
- Behavior – over excitement / abnormal sounds
- Movement – limping, strained gait
- General appearance – restless, dull skin
- Skin / coat – ruffled, starry, loss of hair
- Mucous membrane – dull red – pale / dry
- Production – sudden decline, loss of weight
- Pulse rate – radical departure
- Respiratory rate – abnormal deviation
- Body temperature – too high / too low
- Urination – abnormal color, difficult, less / high
- Defecation process – abnormal – color consistence
- Appetite and feeding – lack / abnormal chewing

NYERI CENTRAL PRE
PAPER 1
SECTION A (30 MARKS)
ANSWER ALL THE QUESTIONS IN THIS SECTION

1. State two effects of HIV/AIDS on agricultural production. 1 mk
2. Give two advantages of shifting cultivation. 1 mk
3. Give four effects of excessive application of nitrogenous fertilizer on crop growth. 2 mks
4. Give two forms in which nitrogen is absorbed from the soil by plants. 2 mks
5. State three causes of blossom end rot in tomatoes. 1 ½ mks
6. State three reasons for processing maize before selling. 3 mks
7. Give four factors that increase seed rate in crop production 2 mks
8. Give two reasons for constructing a shade over a nursery. 1 mk
9. a) Define the term land reform ½ mk
   b) Give three methods of land reforms practiced in Kenya 1 ½ mks
10. List four types of terraces. 2 mks
11. State four causes of land fragmentation. 2 mks
12. Give four benefits of agricultural economics. 2 mks
13. a) What is noxious weed law? 1 mk
    b) State two methods of applying herbicides to weeds. 1 mk
14. Give four reasons why green manure is not commonly used in farming. 2 mks
15. State four factors that determine the choice of water pipes used in the farm. 2 mks
16. List two benefits of intercropping 1 mk
17. List four methods of land clearing 2 mks
18. State two management practices carried out in ranching. 1 mk
19. Give two soil factors that influence soil productivity 1 mk

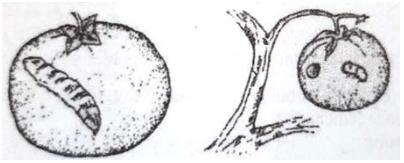
SECTION B (20 MARKS0

20. The diagram below shows parts of a pineapple fruit. Study it and answer the questions that follow.



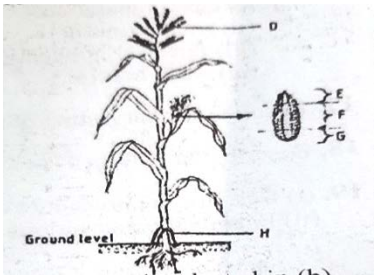
a) Identify the parts labelled K,L and M. 3 mks
b) Which part is commonly used in propagating pineapple crop? 1 mk
c) Give one advantage of using the planting material mentioned in (b) above. 1 mk

21. The diagram below illustrates a tomato fruit infested by a field pest.



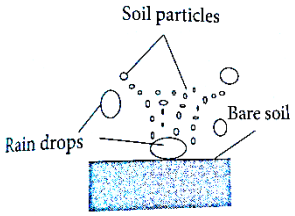
a) Identify the pest. 1 mk
b) State two ways in which the pest is economically important. 2 mks
c) State two cultural ways of controlling the pests. 2 mks

22. The diagram below illustrates a cereal crop plant and the produce. Study the diagram carefully and answer the questions that follow.



a) Name one disease that attacks the part of the plant labelled D in the diagram. 1 mk
b) From which section of the produce labelled E, F and G should seeds for planting be obtained? ½ mk
c) Give one reasons for the answer given in (b) above. 1 mk
d) State two functions of the part labelled H in the diagram. 1 mk
e) A farmer has a piece of land measuring 90m by 60m to plant seeds selected in (b) above at the rate of one seed per hole and a spacing of 90cm by 30cm. Calculate the plant population in the whole field if all the seeds germinated. (Show your working.) 1 ½ mk

23. The diagram below illustrates a type of soil erosion



a) Identify the type of soil erosion. 1 mk
b) Explain how the type of soil erosion takes place. 1 mk
c) How does cover cropping help to control the type of erosion shown? 1 mk
d) What are bunds in soil and water conservation? 1 mk

SECTION C (40 MARKS)

24 a) Explain five ways in which wind influence crop production 5 mks
b) Outline five importance of organic matter in the soil. 5 mks
c) Outline five benefits of using certified seeds in maize production 5 mks
d) State five good qualities of silage 5 mks

25 a) Explain six importances of irrigation in crop production. 6 mks
b) Explain four post harvest practices carried out in cereal grains before storage. 8 mks
c) State six advantages of using herbicides in weed erosion 10 mks

26 a) Explain ten factors that can encourage soil erosion. 10 mks
b) Explain five factors that are considered when designing a crop rotation programme. 10 mks

NYERI CENTRAL PRE
AGRICULTURE
PAPER 2

SECTION A Answer all Questions in this section 30 marks

1. Name one breed of livestock under each of the following categories. 2mks
   a. Dairy cattle breeds.
   b. Dual purpose sheep breeds.
   c. Hair goat.
   d. Dual purpose cattle breed.
2. State four reasons for feeding a lamb on colostrums. 2mks
3. Give four reasons why an animal may be culled. 2mks
4. State two importance of litter in a poultry house. 1mk
5. Name two methods used in selection of breeding stock in livestock production. 1mk
6. Name two nutritional diseases in cattle. 1mk
7. State three advantages of natural calf rearing. 1½ mks
8. State the function of the following farm tools and equipment;

a. pipe cutter. 1mk
b. Wire strainer. 1mk

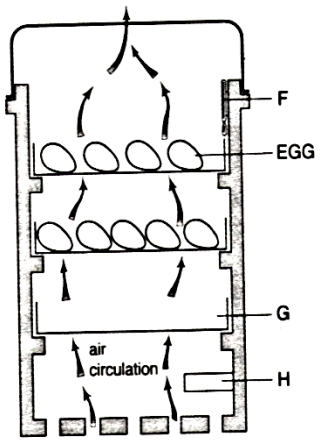
9. Name four parts of farm building that can be reinforced using concrete. 2mks
10. State the intermediate host for liver fluke. ½ mk
11. Name four practices carried out in the crush. 2mks
12. Give one role of a damp proof course in the foundation of a farm building. 1mk
13. Give the terms used to describe the following. 1 ½ mks
    i. Mature male pig.
    ii. Sterilized birds.
    iii. Mature female goat.
14. Give three factors that affect the quality of honey. 1 ½ mks
15. What is the effect f petroleum jelly smeared on combs and wattles of birds. 1mk
16. Give four characteristics of succulent roughages. 2mks
17. State three properties of a good vaccine. 1 ½ mks
18. State four methods of controlling liver flukes. 2mks
19. Name the test of tools used for the following farm operations. 2mks

a. controlling bloat.
b. Restraining an animal during agricultural show exhibition.

20. Mention one protozoan disease tht is spread by vectors. ½ mk

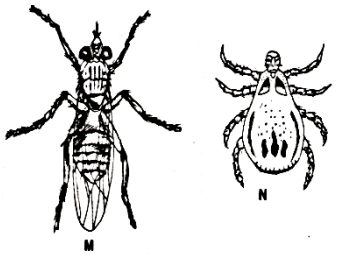
SECTION B - ANSWER ALL QUESTIONS IN THIS SECTION 20 MARKS

21. a) The diagram below illustrates an activity carried out by a poultry farmer. Study the diagram and answer the questions that follow.



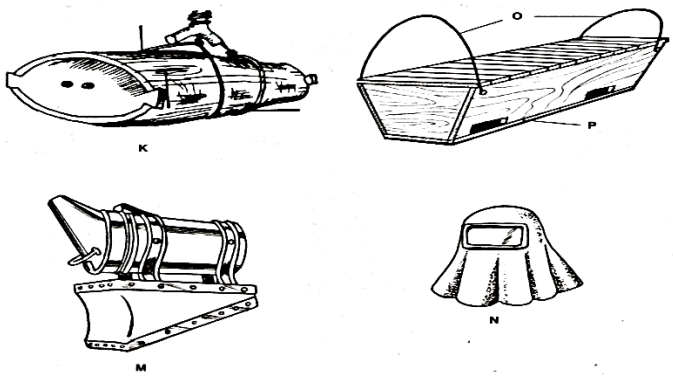
a. Identify the activity carried out in the structure. ½ mk
b. Identify the structure illustrated above. ½ mk
c. Name the parts labelled F, G and H in the structure illustrated above. 3mks
d. State two conditions which are necessary for a successful activity being carried out in the structure illustrated above. 2mks

22. The diagrams below illustrate external parasites. Study the diagrams and answer the questions that follow.



a. Identify the two parasites labelled M and N. 1mk
b. Name one disease transmitted by each of the parasites labelled M and N. 1mk
c. Mention two harmful effects of parasites N in livestock production apart from disease transmission. 2mks

23. Diagrams K, M and N illustrates structures used by a bee farmer. Study the diagrams answer the questions that follow.



a. i. Identify the structures labelled K and M. 2mks
ii. State one use of structure labelled N. 1mk
b. Give one advantage of structure laballed L over K. 1mk
c. State the function of the part labelled O in structure L. 1mk

24. Diagrams N and P illustrates an activity carried out by a dairy farmer. Study the diagrams and answer the questions that follow.

a. Identify the activity. 1mk
b. State two preparations done to the cow before the activity take place. 2mks
c. Outline two conditions that can make the cow hide the milk. 2mks

SECTION C -

ANSWER ANY TWO QUESTIONS IN THIS SECTION 40 MARKS

25.	a)	State the methods of maintaining farm tools and equipment.	8marks
	b.	Describe the importance of fences in agricultural production.	12marks
26.	a)	Give five reasons why Tilapia fish is popular with most Kenyan farmers.	5marks
	b.	State and explain five factors considered in selecting a breading stock.	10marks
	c.	State five advantages of battery cage system of rearing poultry.	5marks
27.	a)	Describe five factors considered in sitting farm structures on the farm.	10marks
	b.	State five advantages of artificial insemination over natural mating.	5marks
	c.	State five body conformation features of a dairy heifer.	5marks

NYERI CENTRAL PRE
AGRICULTURE
PAPER 1
MARKING SCHEME.

SECTION A

1. Two effects of HIV/AIDS on agriculture production.
- Shortage of farm power
- Low living standards which lead to hopelessness and lack of motivation.
- Increases cost of living of AIDS patients and their relatives. 2 x ½ = 1 mk

2. Two advantages of shifting cultivation.
- Land is allowed to rest and regain fertility
- Low incidences of pests and diseases
- Economizes on use of fertilizers. 2 x ½ = 1 mk

3. Four effects of excessive application of nitrogenous fertilizer on crop growth.
- Lodging / weak stems
- Scotching of leaves.
- Delayed maturity
- Excessive foliage growth.
- Cause blossom end-rot in tomatoes. 4 x ½ = 2 mks

4. Two forms in which nitrogen is absorbed from soil by plants.
- Nitrate form / nitrate ions / NO_3^-
- Ammonium form / ammonium ions / NH_4^+ 2x1=2 mks

5. Three causes of blossom end rot in tomatoes.
- Irregular watering
- Lack of calcium
- Excessive nitrogen application 3 x ½ = 1 ½ mks

6. State three reasons for processing maize before selling.
- To improve keeping quality of the produce.
- To make produce more valuable and useful
- To reduce bulkiness of the grains in order to lower transport and dtorage costs.

7. Four factors that can increase seed rate in crop production.
- Seed impurity
- Low germination percentage.
- Close spacing
- More seeds per hole / broad casting
- Early planting / dry planting 4 x ½ = 2 mks

8. Two reasons of constructing a shade over a nursery bed
- Protection against strong sun /regulate temperature.
- Protection against strong wind
- Reduces soil moisture loss
- Intercept rain drops / control hailstorm / control soil erosion. 4 x ½ = 2 mks

9 a) Define land reform
An organized action taken to improve structure of land tenure and land use.
b) Three methods of land reforms.
- Land tenure reforms
- Land consolidation
- Land adjudication and registration
- Settlement
- Resettlement

10) List four types of terraces
- Broad based terraces

- Bench terrace
- Level terrace
- Fanya chini terrace
- Narrow based terrace
- Fanya juu terrace
- Graded terrace.

11. Four causes of land fragmentation
- Shifting cultivation
- Inheritance of land
- Population pressure leading to purchase of small, scattered pieces.
- Settlement and resettlement. 4 x ½=2 mks

12. Four benefits of agricultural economics.
- Maximize profits
- Minimize production cost.
- Satisfy consumer's demands.
- Utilise resources effectively and efficiently.
- Increase production. 4x ½ = 2 mks

13. a) What is noxious weed law?
It is a law in Kenya that prohibits the cultivation of noxious weeds e.g. cannabis.

b) 2 methods of applying herbicides to weeds
- Spraying
- Dusting 2 x ½ = 1 mk

14. Four reasons why green manure is not commonly used in farming
- Manure crop may exhaust soil moisture at the expense of the main crop.
- Nutrients are used by micro-organisms to decompose the green manure.
- Green manure crops are also food crops
- Decomposition takes long. 4x ½ = 2 mks

15. Four factors that determine the choice of water pipes used in the farm.
- Strength of the pipes
- Amount of water to be conveyed
- Cost of the pipe
- Diameter / size of the pipe
- Durability of the pipe
- Colour of the pipe. 4 x ½ = 2 mks

16. 2 benefits of intercropping
- High crop yields per unit area are achieved.
- Soil is well covered against soil erosion
- There is maximum utilization of the soil nutrients.
- In case one crop fails, the farmer depends on the others. 3 x ½ = 1 ½ mks

17 4 methods of clearing land
- Tree felling
- Slashing vegetation
- Use of chemicals i.e. herbicides
- Removal of stumps and trash
- Burning 4 x ½ = 2 mks

18. Two management practices carried out in ranching.
- Disease control
- Feeding and watering / supplementary feeding
- Improving the pasture. 2 x ½ = 1 mk

19. Give 2 soil factors that influence soil productivity. 1 mk

- Soil depth
- Aeration
- Level of nutrients
- Soil PH
- Water holding capacity 2 x ½ = 1 mk

SECTION B

20 (a) Parts labelled
K – Crown
L- Fruit
M – Sucker 3 x 1 3 mks

b) Part commonly used in propagating pineapple crop.
M - Sucker 1 x 1 =1 mk

c) One advantage of using the planting material mentioned in (b) above.
They are the fastest in maturing. 1 x 1=1 mk

21 a) Identity of the pest
American bollworm 1 x 1=1 mk

b) Two ways in which the pest is economically important.

- Reduces the quality of produce by boring holes on fruits
- Increases the cost of production by purchase of pesticides. 2 x 1=2 mks

c) 2 control measures for the pest.

- Early planting
- Field hygiene
- Close season
- Crop rotation
- Intercropping
- Destruction of alternate host 2 x 1 =2 mks

22 a) Smut / head smut 1 x1 =1 mk

b) F 1/2MK

c) Seeds are uniform in size / shape / weight/ maturity 1 x 1 =1 mk

d) Uses of part labelled H

- For anchorage / support
- For absorption of water, nutrients from the soil
- Photosynthesis / manufacture plant food 2 x ½ = 1 mk

e) Plant population = $\frac{\text{Area of land}}{\text{Spacing}}$

= $\frac{9000\text{cm} \times 6000}{90\text{cm} \times 30\text{ cm}}$ OR

$\frac{90\text{m} \times 60\text{m}}{0.9\text{m} \times 0.3\text{m}} = 20{,}000$ plants 1 ½ mks

23 (a) Type of soil erosion
Splash erosion / raindrop erosion 1 x 1 = 1 mk

b) How splash erosion takes place rain drops with kinetic energy hitting bare soil surface detach and disperse the soil particles. 1 x 1 = 1 mk

c) How cover crop help to control splash erosion.

- Reduces the impact of raindrops
- Prevents movement of soil
- Plant roots bind soil particles. 1 x 1= 1 mk

d) What are bunds in soil and water conservation.

- These are heaps or banks of soil built along the contours. The bunds may be planted with grass to hold the soil firmly. 1 x 1 = 1 mk

SECTION C

24 a) Five ways in which wind influence crop production

- Strong wind increases the rate of evaporation / wilting
- Influences amount of rainfall in a given area.
- Help in pollination of crops
- Strong wind may cause soil erosion
- Wind can spread diseases, pest and weeds.
- Strong wind may cause lodging of certain crops
- Winds help in seed dispersal.
- Wind is used in winnowing / cleaning grains.
- Strong wind have a cooling effect which influences rate of physiological processes.

b) Five importance of organic matter in the soil.

- It increases the water holding capacity by the soil.
- It improves soil fertility by releasing various nutrients into the soil.
- It provides food and shelter for micro-organisms responsible for the decomposition of organic matter.
- It improves soil structure" humus binds soil particles together thus improving soil structure.
- It buffers soil PH by providing rapid chemical changes due to the addition of acidic fertlizers and liming materials.
- It reduces toxicity of plant poisons that may have built up in the soil.
- Humus gives soil a dark colour which absorbs heat, regulating soil temperature.

c) Five benefits of using certified seeds in maize production.

- They are of high quality and give high yields
- They are healthy, strong and free from pests and diseases
- They have high germination potential
- They are pure, and free from foreign materials.
- They are able to adapt to ecological conditions easily.
- They are free from physical damage. 5 x 1= 5 mks

d) Five qualities of good silage

- Have a PH of 4.2
- Have 5.9 % lactic acid.
- Free from moulds and bad odour
- Be green to yellow not brown or black
- Have fine texture with no slimness.
- Be from high quality foliage cut at proper stage of growth. 5 x 1= 5 mks

25 a) Six importance of irrigation in crop production

- Control pests
- Allow growing of crops for export market and therefore contribute to a country's revenue.
- Allows production of paddy rice
- Irrigation increases crop yields and ensures a steady supply of food throughout the year.
- Maximizes the utilization of resources e.g. in places where the soil is fertile but rainwater is inadequate.
- Important for the reclamation of arid and semi-arid land.
- Source of employment where it is used extremely. 6 x 1=6 mks

b) Four post harvest practices carried out in cereal grains before storage.

- Threshing / shelling: This is thee act of removing maize grains from cobs.
- Drying: Grains are dried until they have the correct moisture content before storage to prevent rotting or fungal attack.
- Cleaning / winnowing: It is done to remove light seeds, chaff pieces of leaves, stalk from the grains.
- Dusting: This is the practice of applying chemical powders on seeds to prevent attack by storage pests.

- Processing: This is the transformation of raw material into final products.
- Sorting and grading: This is placement of farm produce according to consumers need and price regulation.
- Packaging: This is placement of produce in standard bags or packets in readiness for marketing.

Stating 1mk
Explanation 1mk 4 x 2 = 8 mks

c) Four advantages of using herbicides in weed control
- Requires less labour
- Crop roots are not disturbed
- It is cheaper than mechanical cultivation
- More effective in plants that are injurious to the farmer.
- Soil is not disturbed and hence soil structure is maintained.
- Easier than mechanical cultivation.
- Efficient in both wet and dry soil conditions. 4 x 1 =4 mks

26 a) Factors that can encourage soil erosion
- Lack of ground cover exposes soil to agents of erosion.
- Steep slopes increase the speed of surface run-offs hence erosive power of water.
- Light / sandy soils are easily carried away by agents of erosion.
- Shallow soils are easily saturated with water and carried away.
- High rainfall intensity on the bare ground leads to detachment of soil and increase surface run off hence erosion.
- Frequent cultivation / over cultivation pulverizes the soil making it easy to detach and carried away.
- Overstocking leads to overgrazing which destroys ground exposing it agents of erosion.
- Deforestation destroy vegetation cover and exposes soil to agents of erosion
- Ploughing up and down the slopes creates channels which speed up and increase the erosive capacity of water.
- Cultivation of riverbanks destroys riverine vegetation and destroys soil structure exposing it to agents of erosion.
- Cultivating the soil when too dry destroys structure making it easily eroded.
- Long slope increases volume / speed of run – off thus increasing the erosive powder of water
- High rainfall amount saturates the soil increasing soil erosion.

b) Five factors considered when designing a crop rotation programme.
- Crop root depth: Deep rooted crops should be alternated with shallow rooted crop
- Crop nutrient requirements: Crops that are heavy feeders should come first in a newly cultivated land.
- Weed control: Crops that are easy to weed are alternated with those that are difficult to weed.
- Pest and disease control: Crops of the same families should not follow each other as they are attacked by the same pests and diseases.
- Soil fertility: Leguminous crop should be included to improve soil fertility.
- Soil structure: Grass leys or bush follows should be included in the rotation to improve soil structure.
- Cover crops should be alternated with those crops that do not cover the ground to minimize surface run-off.

NYERI CENTRAL PRE
AGRICULTURE
PAPER 2
MARKING SCHEME

SECTION A 30 MARKS

1. Name one breed of livestock under each of the following categories. 2mks
a. Dairy cattle breeds.
- Friesian - Guernsey - Aryshire - Jersey 1x ½ = ½ mk
b. Dual purpose sheep breeds.
- Romney marsh - Corriedale - Hampshire 1x ½ =1/2 mk
c. Hair goat.
- Angora goat
Dual purpose cattle breeds.
- Sahiwal - Redpoll - Simmental 1x ½ = ½ mk
2. State four reasons for feeding a lamb on colostrums. 2mks
- It is highly digestible - It is highly nutritious
- It has antibodies - it has a laxative effect
- It is highly palatable. 4x ½ =2mks
3. Give four reasons why an animal may be culled. 2mks
- Poor health - Old age - Physical deformaties - Poor mothering ability
- Low production - Bad temperament/vices - Infertility
- Poor quality products - Hereditary defects. 4x ½ =2mks
4. State two importance of litter in a poultry house. 1mk
- To absorb moisture - To maintain warmth
- keep birds busy scratching thus reduducing cannibalism. 2x ½ =1mk
5. Name two methods used in selection of breeding stock in livestock production. 1mk
- Mass selection - -Progeny testing - Contemporary comparison. 2 x ½ =1mk
6. Name two nutritional diseases in cattle. 1mk
- Milk fever - bloat 2x ½ = 1mk
7. State three advantages of natural calf rearing. 1 ½ mks
- calf takes milk at body temperature
- milk is free from contamination
- it prevents scouring in calves. 3x ½ =1 ½ mks
8. State the function of the following farm tools and equipment;
a. pipe cutter. 1mk
- cutting PVC/plastic pipes 1x1=1mk
b. Wire strainer. 1mk
- tightening wires during fencing 1x1=1mk
9. Name four parts of farm building that can be reinforced using concrete. 2mks
- walls - floor/slab - pillars - lintel 4x ½ =2mks
10. State the intermediate host for liver fluke. ½ mk
- fresh water snail. ½ mk
11. Name four practices carried out in the crush. 2mks
- dehorning - artificial insemination - Identification
- vaccination/injection - pregnancy diagnosis
- spraying to control external parasites 4x ½ = 2mks
12. Give one role of a damp proof course in the foundation of a farm building. 1mk
- prevents moisture from rising up the wall
- prevents termites from climbing up the wall 1x1=1mk
13. Give the terms used to describe the following. 1 ½ mks
i. Mature male pig.
Boar ½ mk
ii. Sterilized birds.

Capon ½ mk

iii. Mature female goat.
Doe/nanny ½ mk

14. Give three factors that affect the quality of honey. 1 ½ mks
- type of plants from which nectar was collected.
- maturity stage of honey at the time of harvesting.
- method of harvesting
- method of processing honey. 3x ½ =1 ½ mks

15. What is the effect f petroleum jelly smeared on combs and wattles of birds. 1mk
- it suffocates the fleas to death

16. Give four characteristics of succulent roughages. 2mks
- high fibre content - High moisture content - low protein content
- High carbohydrates content. 4 x ½ =2mks

17. State three properties of a good vaccine. 1 ½ mks
- easy to administer - no side effects - compatible with other vaccines
- Have longer keeping life. 3x ½ =1 ½ mks

18. State four methods of controlling liver flukes. 2mks
- Physically killing the fresh water snail
- draining off, swampy areas
- avoid grazing livestock in swampy areas
- deworming livestock animals 4 x ½ =2mks

19. Name the test of tools used for the following farm operations. 2mks

a. controlling bloat.
Trocar and canula

b. Restraining an animal during agricultural show exhibition.
- Bullring and lead stick

20. Mention one protozoan disease tht is spread by vectors. ½ mk
- East Coast fever - Anaplasmosis - Trypanosomiasis 1x ½ = ½ mk

SECTION B

21. a) identify the activity carried out in the structure
- Artificial incubation. ½ mk

b) Identify the structure illustrated above. ½ mk
- Artificial incubator

c) Name the parts labelled F, G and H
F – Thermometer G-Warm water H-source of heat (3×1= 3mks)

d. Conditions necessary for a successful activity:
- Relative humidity of least 60%
- Fresh air circulation/proper ventilation.
- Temperature of 372-39.40^{o}C
- Egg turning -fertilized eggs.

22. a) Identify the two parasites.
M-Tsetse fly N – Tick

b) Name the disease transmitted by the parasite
M - Trypanosomiasis / Nagana ½ mk
N - East Coast, fever
- Anaplasmosis
- Heart water disease ½ mk

c) Harmful effects of parasite N.
- sucks blood causing anaemia
- cause irritation to the animal
- Damages/lowers the quality of skin Lowers hide.
- Increases the cost of livestock production. (2x1=2mks)

23. cases Identify the Structures labelled K and M

- K - Log hive M - Smoker (2x1=2mks)

ii. State one use of structure labelled N.

N-protecting the head/ face from the stings 1mk

b) Advantage of Structure labelled L over.

- Cheap to construct and repair.
- Has bars to inspect combs easily through lifting
- produces high quality honey using the queen excluder
- Honey Combs can be removed without disturbing the brood. (1x1=1mk),

c) Function the part labelled O inthe Structure L.

O - for suspending/ hanging the hive.

24. a) Identify the activity.

Hand milking 1mk

b) Preparations done to the cow.

- Prepare the cow in the parlour through tying/ restraining the cow in the parlour.
- feeding / putting feed in the feeding trough.
- Wiping the teats with udder cloth/towel. (2×1=2mks)

c) Conditions that Milk. Make the cow to hide

- washing the teats with cold water
- Inducing pain to the teats
- Strange Surroundings
- Anxiety
- fear
- change of milk Milking Man routine
- Poor milking techniques. (2×1=2mks

SECTION C

25) a) Methods of maintaining farm tools and equipment

- cleaning the tools after use.
- Storage of tools at the right places.
- Replace the wornout parts of the tools.
- Repair the broken parts of the tools.
- sharpen cutting edges of the tools.
- Greasing moving parts to reduce friction.
- oiling to the metallic parts to prevent rusting.
- Straightening bent blades.
- Tightening loose bolts and nuts. (8x1=8mks)

b) Importance of fences in agricultural production

- Mark farm boundary.
- keep off intruders and thieves.
- protect animals from predators.
- Protect crops from wildlife and farm animals.
- Enables rotational grazing through paddocking.
- Controls parasites through keeping away wild and stray animals.
- Controls livestock diseases by keeping away wild carries of diseases.
- Controls breeding pattern in livestock
- Control soil erosion e.g live fence.
- Act as wind breakers.
- help in isolating the sick animals from the healthy ones.
- Some live fences can provide fodder to farm animals (12×1=12mks)

26 a) Reasons why Tilapia fish is popular with most Kenyan farmers.

- feed on many food wastes from home kitchen.
- fast growing
- Breed very fast.

- Do not suffer from many parasites.
- Cleaning agents as they feed on mosquito larvae and algae.
- highly preferred by consumers
- Has good taste. (5x1 = 5mks)

(b) Factors considered Stock. in selecting breeding

i. Health - animals selected for breeding must be healthy as sickly animals will not breed well.

ii) Age of the animal - Select young animals as they have a longer productive life.

iii. Physical fitness - Select animals that are free from any physical defects.

iv. level of production - selected animals should be high yielding.

v. Adaptability - animals selected should be well adapted to the prevailing climatic conditions in the area

vi. Quality of products - Select animals that produce high quality products.

vii) Temperament/ behaviour- select animals with good temperament.

viii. Mothering ability- select female animals with good mothering ability.

ix. Prolificacy - select animals which are highly prolific. 5x2=10mks

c. Advantages of battery Cage System.

- High stocking rate is achieved.
- Eggs collected are clean.
- The system can easily be mechanized.
- Vices such as egg eating and cannibalism are not there.
- Discourages broodiness in hens.
- Water and feeds are not contaminated as birds cannot step on them.
- Individual egg production record can be kept. 5x1=5mks

27.a) factors considered in sitting farm structures on the farm.

i. Security - the structure should be located on a safe place from predators and thieves.

ii. Direction of prevailing wind - Structures that produce foul smells e.g latrines and pigsty should be sited on the leeward side of the homestead.

iii. Drainage - the aver should have good drainage to prevent the structure from being destroyed by water.

iv. Location of the homestead - homestead should be sited at a point where it would be possible to have a good view the farm.

v. Accessibility - the structure should be to reach from most parts of the farm.

vi. Relationship between the Structures - structures with related uses should be constructed close to each other so as to save time and labour. 5x2= 10mks

b. Advantages of artificial insemination.

- Semen from one superior bull can be used to serve many cows.
- Semen can be stored from a long time even after a bull is dead.
- It controls transmission of breeding diseases.
- It is easy to control in breeding.
- It eliminates dangerous bulls from the farm.
- It reduces expenses of keeping a bull on pasture and veterinary bills.
- It is easy to control breeding as the farmer can time when to breed his/ her cows. 5x1=5mks.

c. Body conformation features of a dairy heifer.

- Straight topline
- Have prominent milk veins
- Have large stomach which makes them heavy feeders.
- Have less flesh on their bodies / lean bodies.
- Wedged shaped bodies.
- Long thin neck.
- Have large and well-developed udder with large teats. 5mks

ITHANGA /KAKUZI JET
AGRICULTURE
PAPER 1
TIME 2 Hours
SECTION A (30 Marks)

Answer all questions in the spaces provided.

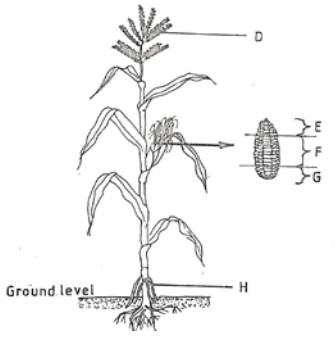
1. Give **four** advantages of intensive farming (2 marks)
2 Give **four** factors that can increase depth of planting in crop production. (2 marks)
3. Give **four** reasons why soil is important to crops. (2 marks)
4. Give **four** factors that influence the number of secondary cultivations in seedbed preparation.
5. Distinguish between over-sowing and under-sowing. (2 marks)
6. Give **four** reasons for early seedbed preparation. (2 marks)
7. State **four** factors that contribute to the competitive ability of weeds. (2 marks)
8. (a) State **four** ways of treating planting materials. (2 marks)
   (b) State **four** advantages of row planting in crop production. (2 marks)
9. (a) Name **four** types of water pumps which can be used on a farm. (2 marks)
   (b) State **three** disadvantages of using plastic pipes to convey water. (1 mark)
10. (a) Give **one** reason for carrying out each of the following practices in a tomato nursery
   (i) Pricking out. (½ mark)
   (ii) Hardening off. (½ mark)

   (b) State **two** staking in tomatoes. (1 mark)
11. a) Give **two** ways in which pastures are classified. (1 mark)
12. a) Explain the term opportunity cost as used in economics. (2 marks)
   b) Give two conditions in agricultural production under which opportunity cost is zero. (1 mark)
13. Name **two** farming practices which may lead to soil erosion. (1 mark)
14. Give **two** ways of removing biological impurities from water before use in the farm. (1 marks)
15. State **two** benefits of conserving forage crops. (1 mark)

SECTION B (20 MARKS)

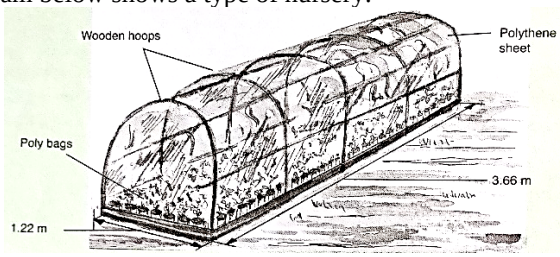
Answer *all* the questions in this section in the spaces provided.

16 A farmer applied a compound fertilizer 10:20:0 on a three hectares piece of land at a rate of 180 kg N per hectare
   (i) Calculate the quantity of the compound fertilizer the farmer applied on the piece of land.
   (ii) What do the figures 10 and 20 stand for in the compound fertilizer? (2 marks)
17. The diagram below illustrates a cereal crop plant and its produce. Study the diagram carefully and answer the questions that follow



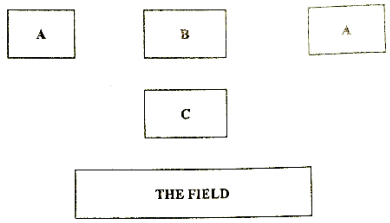
   a) Name **one** disease that attacks the part of the plant labeled D in the diagram. (1 mark)
   b) From which section of the produce labeled E, F and G should seed for planting be obtained? (1 mark)
   c) Give **one** reason for the answer you have given in (b) above. (1 mark)
   d) State **two** functions of the part labeled H in the diagram. (2 marks)

18. The diagram below shows a type of nursery.



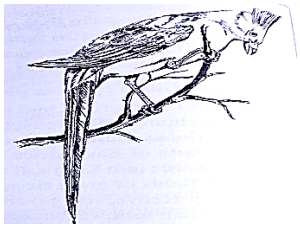
(a) Identify the type of nursery. (1 mark)
(b) State **two** functions of the polythene sheet. (2 marks)
(c) State **two** precautions that should be observed when preparing the planting material for the above nursery. (2 marks)

19. The illustration below shows a four heap system of making compost manure. Study it and answer the questions that follow.



i) By use of arrows indicate how the decomposing materials should be transferred from one heap to another till the manure is applied in the field. (1 mark)
ii) How long does the material take to be ready for application in the field as manure?
iii) Give one reason for turning the material regularly. (1 marks)
iv) Give two reasons why it is necessary to sprinkle water on the heap. (2 marks)

20. The diagram below shows a pest.



(a) Identify the pests. (1 mark)
(b) Give two effects of the above peat on crops. (2 mark)
(c) Give two ways of controlling the pest. (2 marks)

SECTION C (40 Marks)

Answer any two questions in this section in the spaces provided.

21. (a) Describe eight ways in which water pollution caused by farming activities can be controlled. (10 marks)

(b) Describe the production of maize under the following sub-headings
(i) Seedbed preparation. (4 marks)
(ii) Planting. (3 marks)
(iii) Harvesting. (3 marks)

21. (a) Explain why settlement schemes were established in Kenya soon after independence.
(b) Why is pruning done in crop production? (10 marks)

22. (a) Explain five farming practices that destroy soil structure. (10 marks)
(b) Describe methods used to reclaim a swampy land for agricultural production. (10 marks)

ITHANGA /KAKUZI JET
PAPER TWO
443/1
Paper 2
2 Hours

SECTION A (30 Marks)

Answer all questions in the spaces provided.

1. Name the **two** products obtained from dual purpose cattle. (2 marks)

2. State **four** management practices that should be carried out during the mating season in sheep.

3. Name **two** developmental stages of liver fluke which occur in the fresh water snail. (1 marks)

4. State **four** disadvantages of using plunge dips in tick control. (2 marks)

5. **(a)** Name the complementary tool for each of the tools named below

i Syringe. (½ mark)

ii Elastrator. (½ mark)

(b) Name **four** tools that are used when laying concrete blocks during construction of a wall.

6. State **two** observable signs of heat in a heifer. (1 marks)

7. Outline **four** maintenance practice of disc harrow. (2 marks)

8. State **four** signs of infestation by external parasites in goats. (2 marks)

9. State **four** reasons why dorper breed of sheep is good for mutton production (2 marks)

10. Give **four** conditions that reduce the quality of eggs for hutching. (2 marks)

11. Give **four** ways in which disease causing organisms can gain access into a newly born calf.

12. **(a)** List **four** categories of livestock diseases. (2 marks)

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

13. Give **four** functions of calcium in a dairy cow. (2 marks)

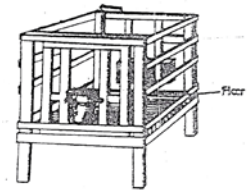
14. State **four** desirable qualities of a livestock ration. (2 marks)

15. Distinguish between tupping and serving as used in livestock rearing. (2 marks)

SECTION B (20 MARKS)

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

16. The diagram below represents a calf pen. Study the diagram and answer the questions that follow.



(a) Identify the type of floor. (1 mark)

(b) Give **one** reason for having the floor of the calf pen raised. (1 mark)

(c) State **three** factors considered when sitting the calf pen. (3 marks)

17. The following diagram illustrates a symptom of a disease in poultry. Study it carefully and answer the questions that follow.

(a) Identify the disease. (1 mark)

(b) Apart from lesions, state **two** other symptoms of the diseases. (1 mark)

(c) State **three** control measures for the disease. (3 marks)

18. Below is an illustration of a camel. Study it and answer the questions that follow.

a) Identify the camel species illustrated above. (1 mark)
b) Give a reason for your answer in 18(a) above. (1 mark)
c) Give three **observable** feature that enable the camel species illustrated above to survive in its habitat.

19. The diagram below illustrates a cow suffering from malnutrition.

a) Identify the mineral deficiency shown by the cow. (1 mark)
b) State **two** signs observed on a dairy cows suffering from the mineral deficiency. (1 mark)
c) State **three** methods of controlling the deficiency illustrated. (3 marks)

SECTION C (40 Marks)

Answer any two questions in this section in the spaces provided.

20. (a) Describe **eight** control measures for cannibalism in layers. (8 marks)
(b) Explain **six** factors that should be considered when selecting livestock for breeding

21. (a) Describe the management practices that would ensure maximum yield of fish in a fish pond.
(b) Describe the management practice that would ensure clean milk production in a dairy farm.

22. (a) Describe the life cycle of a beef tapeworm (Taenia spp). (10 marks)
(b) Explain **ten** measures used to control livestock diseases. (10 marks)

ITHANGA /KAKUZI JET
PAPER ONE
MARKING SCHEME
SECTION A (30 Marks)

1. Give four advantages of intensive farming **(2 marks)**

- Increases production per unit area
- Farm supervision is easy
- Maximizes utilization of available land
- Is ideal for densely population areas/small land holdings
- Utilizes technology to increase production

2 Give four factors that can increase depth of planting in crop production. (2 marks)

- When seed are large
- When soil moisture level is low/dry planting
- When risk of seed eaters/pest is high
- When soil is light/sandy
- When planting cereal crops

3. **Give four reasons why soil is important to crops.** **(2 marks)**

- Supports plant/provides anchorage to crops
- Provides nutrients and water
- Contains organic matter, food for micro-organism
- Soil warmth optimises activities for bio chemical enzymatic reactions that bring about growth e.g., germination process.
- Contains air necessary for crop growth/ 02/CO2

4. **Give four factors that influence the number of secondary cultivations in seedbed preparation.**

- Type of crops to be established/size of seed
- Moisture content of soil
- Type of soil
- Conditions of land after primary cultivation/implements used for primary cultivation
- Amount of organic matter on the surface
- Vulnerability of soil erosion/slope of land/topography

5. Distinguish between over-sowing and under-sowing. (2 marks)

Over-sowing is the introduction of high quality pasture or legume crop an existing grass or legume pasture another growing crop while under-sowing is the introduction of a crop underneath another growing crop

6. **Give four reasons for early seedbed preparation.** **(2 marks)**

- Allows time for organic matter to decompose and form humus.
- Facilitates timely subsequent operations.
- Allows time for weeds to die/dehydrate
- Allows weathering of soil clods before subsequent operations
- Minimizes competition of labor
- Allow time for pests and diseases causing organisms to starve and die
- Allows time for soil aerations/gaseous exchange to take place
- Allows time for water infiltration

7**. State four factors that contribute to the competitive ability of weeds.** **(2 marks)**

- Some produce large quantities of seeds
- Some have seeds that remain viable for a long time
- Some have effective mechanisms of dispersal
- Some weeds have the ability to propagate both by seeds and vegetatively
- Some weeds are deep rooted to draw water from the subsoil
- Some have underground structure difficult to control

- Some are able to survive with limited nutrients/hardy
- Some have short life cycle
- Some weeds are allelopathic
- Some irritate worker making them difficult to weed

8. (a) State four ways of treating planting materials. (2 marks)
- Breaking seed dormancy
- Chitting
- Inoculation of legume sees
- Seed dressing with fungicides
- Dipping of sugarcane setts in hot water to control ratoon stunting disease

(b) **State four advantages of row planting in crop production. (2 marks)**
- Field operations can be mechanized
- Low seed rate than broadcasting
- Facilitates cultural practices/accept specific practices
- Ensures proper seeding
- Ensures uniform germination of seeds

9. (a) **Name four types of water pumps which can be used on a farm. (2 marks)**
- Centrifugal/rotordynamic pumps
- Piston/reciprocating pumps
- Hydram
- Rotary

(b) **State three disadvantages of using plastic pipes to convey water. (1 mark)**
- Can be gnawed by rodents/easily damaged
- Become brittle on exposure to strong sun
- Can burst at high pressure

10. (a) **Give one reason for carrying out each of the following practices in a tomato nursery**

(i) Pricking out.

To avoid overcrowding in the primary nursery/to enable seedlings to grow vigorously and healthy

(ii) Hardening off.

To make seedlings get used to the actual field conditions

(b) State two staking in tomatoes. (1 mark)
- Ensures production of clean fruits/improves quality of fruits
- Helps in controlling fungal blight
- Facilitates spraying /harvesting of the crops/weeding/pruning

11. (a) **Give two ways in which pastures are classified. (1 mark)**
- Pasture stand; pure/mixed
- Pasture establishment/natural artificial
- Ecological zone/altitude

12. **a) Explain the term opportunity cost as used in economics. (2 marks)**

This is the value of foregone best alternative/revenue forgone as a result of choosing the best alternative

b) Give two conditions in agricultural production under which opportunity cost is zero.

When there are no alternative enterprises/farm businesses

When production resources are plentiful /free

13. **Name two farming practices which may lead to soil erosion. (1 mark)**
- Cultivation along the slopes/across contours/along river banks
- Continuous cropping with annual crops
- Pulverization of soil due to over-cultivation
- Burning of vegetation/overgrazing/overstocking

14. Give two ways of removing biological impurities from water before use in the farm.

- Boiling
- Adding chlorine solution
- Storing in open tanks for 36 hours

15. **State two benefits of conserving forage crops.**
- Provide feed during period of scarcity/distribute available forage for livestock through the year
- Ensure better and proper utilization of land

Can be sold for money

SECTION B (20 MARKS)

16 A farmer applied a compound fertilizer 10:20:0 on a three hectares piece of land at a rate of 180 kg N per hectare

i. Calculate the quantity of the compound fertilizer the farmer applied on the piece of land.

Quantity of N fertilizer applied

10 kg N is in 100 kg of the fertilizer;

180 kg N=$\frac{180\times100}{10}$=1800x3

=5400 kg of the fertilizer

ii. What do the figures 10 and 20 stand for in the compound fertilizer? (2 marks)

10=nitrogen percentage/10% nitrogen/Kg of N in 100Kg

20=phosphorus percentage/20 phosphorus/Kg of phosphorous in 100Kg

17.

a) Name one disease that attacks the part of the plant labeled D in the diagram. (1 mark)

Smut/head smut

b) From which section of the produce labeled E, F and G should seed for planting be obtained?

F

c) Give one reason for the answer you have given in (b) above. (1 mark)

Seeds are uniform in size, shape and weight/maturity

d) State two functions of the part labeled H in the diagram. (2 marks)

For anchorage/support

Water and mineral uptake

18. (a) Identify the type of nursery. (1 mark)

Vegetative propagation nursery

(b) State two functions of the polythene sheet. (2 marks)
- Raises humidity
- Prevents evapotranspiration
- Raises temperature
- Prevent weeds and disease spread

(c) State two **precautions that should be observed when preparing the planting material for the above nursery. (2 marks)**
- Place it in water until it is planted to prevent dehydration
- Each cutting should have a bud for establishment and a single leaf for photosynthesis
- A sharp knife or blade should be used to prevent breaking of the cutting
- Make a slanting cut to prevent accumulation of moisture that would cause rotting

19. The illustration below shows a four-heap system of making compost manure. Study it and answer the questions that follow.

(i) By use of arrows indicate how the decomposing materials should be transferred from one heap to another till the manure is applied in the field. (1 mark)

(ii) How long does the material take to be ready for application in the field as manure?

3-6 months

iii) Give one reason for turning the material regularly. (1 marks)

To facilitate uniform decomposition

(iv) Give two reasons why it is necessary to sprinkle water on the heap. (2 marks)

To regulate temperature

To create a moist environment for microbial activity

20. The diagram below shows a pest.

(a) Identify the pests. (1 mark)

Mouse bird/field pest

(b) Give two effects of the above peat on crops. (2 mark)

- Lower quantity of fruits
- Damage bean seedlings in early stages
- Lower quality

(c) Give two ways of controlling the pest. (2 marks)

- Scaring away
- Trapping and killing
- Using flashing devices
- Poisoning
- Timely harvesting of fruits

SECTION C (40 Marks)

21. (a) **Describe eight ways in which water pollution caused by farming activities can be controlled.**

- By avoiding cultivating along water sources such as rivers/river banks
- Avoiding cultivation during dry windy periods
- Prohibiting settlement of people near river valleys or water catchment areas
- Prohibiting the excessive use of agrochemicals
- Practicing soil conservation measures such as terracing, mulching, contour farming
- Fencing water sources
- By using integrated pest methods of pest and weed control/controlled use of agricultural chemicals
- By sing efficient pesticide application techniques
- By substituting or using less toxic/ less persistent/less leachable/biodegradable farm chemicals
- By planting vegetation along the river banks to reduce siltation in rivers
- Maintaining correct/appropriate stocking rate/avoid overgrazing
- Proper disposal of farm wastes and chemical containers
- Proper treatment of waste before disposal
- Controlling floods
- Planting trees along river banks
- Contour ploughing on slopes/avoid cultivating slopes
- Practicing organic farming
- Controlling erosion

(b) **Describe the production of maize under the following sub-headings**

i. Seedbed preparation. **(4 marks)**

- Bush clearing
- Carry out primary cultivation
- Carry out secondary cultivation
- Prepare land early/during dry season
- Deep ploughing / to remove perennial weeds
- Harrow to medium tilth
- Carry out soil and water conservation measures

ii. Planting. **(3 marks)**

- Plant at the onset of rain/dry planting
- Space according to variety/75-90 x 20-30cm
- Apply p205 at the rate of 120kg/ha
- Plant one or two seeds per hole
- Planting depth 2.5- 10cm depending on the moisture content
- Plant manually or use planters

- Use phosphatic fertilizer

iii. Harvesting. (3 marks)

- Harvest after 3 – 9 months
- Harvest when the whole plant dries/harvest according to market demand
- Harvest manually by hand or use combine harvesters
- Cut and stook the maize if harvesting is manual
- Remove the cobbed maize from the husks

21. (a) Explain why settlement schemes were established in Kenya soon after independence.

- To transfer land from European to Africans to enable the Africans to own land
- To settle the landless by transferring landless/squatters to new land allocation
- To make use of underutilized/idle so as to increase production
- To create employment by working on the farm given to produce crops and keep livestock
- To increase agricultural production through better methods of land utilization and foreign markets through exports which earned exchange
- To ease population pressure on land by transferring people from overpopulated areas to scarcely populated areas

(b) **Why is pruning done in crop production? (10 marks)**

- To make a plant take a desired shape
- To remove diseased parts to prevent disease spread
- Control cropping to ensure production of high-quality fruits
- Ease penetration of sprays to minimize wastage
- To control pests/disease by eliminating the micro-climates.
- To facilitate light penetration and optimize photosynthesis process
- To remove dead/broken parts
- To remove old/unproductive parts on which resources are wasted
- To promote lateral growth e.g. in tea
- To facilitate management practices e.g. weeding and harvesting
- To optimize sun shine penetration

22. (a) **Explain five farming practices that destroy soil structure. (10 marks)**

- Use of heavy machinery creates hard pans
- Over-cultivation pulverizes soil
- Cultivating very wet soils using heavy machinery creates hard pans
- Deforestation destroys soil cover
- Overstocking destroys soil cover
- Burning destroys soil cover/humus/micro-organisms
- Continuous cropping pulverizes soil
- Continuous cultivating at the same level creates hard pans

(b) Describe methods used to reclaim a swampy land for agricultural production.

Open ditches, ditches with V, Open-V or U-shapes are dug to collect/retain or remove excess water from the farm by qualitative flow

Underground drain/perforated pipes are laid underground, for excess water to seep in from surrounding areas and flow to a waterway

French drains, underground ditches are dug and filled with stones and gravel and covered with soil, excess water seeps into the drains and is carried away

Cambered beds, raised beds are constructed to allow excess water to flow away in furrows and lower the water table

Pumping, excess water is removed from the field using water pumps

Planting trees, Eucalyptus trees are cultivated to absorb and remove water from the field

ITHANGA /KAKUZI JET
AGRICULTURE
PAPER 2
MARKING SCHEME

SECTION A (30 Marks)

1. Name the two products obtained from dual purpose cattle. (2 marks)
- Beef
- Hides

2. **State four management practices that should be carried out during the mating season in sheep.**
- Deworming
- Flushing
- Crutching/ tagging/ringing/cutting wool around reproductive organs
- Raddling
- Wigging/Eyeing/cutting wool around the face

3. **Name two developmental stages of liver fluke which occur in the fresh water snail.**
- Sporocyst
- Cercaria
- Redia

4. **State four disadvantages of using plunge dips in tick control. (2 marks)**
- High initial construction cost (high capital) / expensive
- Dangerous for young and pregnant animals/sick/heavy animals
- Requires a lot of water
- Poisoning by swallowed dip wash

5. **a) Name the complementary tool for each of the tools named below**
i Syringe.
Hypodermic needle
ii Elastrator.
Rubber ring

b) **Name four tools that are used when laying concrete blocks during construction of a wall.**
- Plumb bob/plumb line
- Masons trowel
- Spirit level/pipe level
- Wood float/steel float
- Masons square
- Masons line

6. **State two observable signs of heat in a heifer. (1 marks)**
- Restlessness/run around
- Mounting others/is mounted
- Vulva swells and become reddish
- Clear slimy mucus discharge Frequent mooing

7. Outline four maintenance practice of disc harrow. (2 marks)
- Clean after work
- Tighten loose nuts and bolts
- Replace worn-out parts
- Greasing moving/rotary parts
- Apply oil/painting before long storage

8. **State four signs of infestation by external parasites in goats. (2 marks)**
- Presence of sores/wounds on the skin
- Irritation/scratching by the animal
- Loss of hair/alopecia
- Anaemia

- Presence of various developmental stages of the parasite on the animal

9. **State reasons why dorper breed of sheep is good for mutton production (2 marks)**
- Produce high quality carcass
- Is highly prolific
- Grows fast
- Well adapted to hot and dry areas
- Matures early

10. **Give four conditions that reduce the quality of eggs for hutching. (2 marks)**
- Dirt
- Abnormal size/under size/over-size eggs
- Irregular /broken/soft shell
- Internal abnormalities e.g. double yolk, meat spot/poor candling qualities
- Poor storage/long storage beyond 5 days

11. **Give four ways in which disease causing organisms can gain access into a newly born calf.**
- Through the mouth/natural openings
- Through umbilical cord
- Through respiratory track
- Through injury/wounds on the body
- Through bites by disease vectors

12. (a) **List four categories of livestock diseases. (2 marks)**
- Bacterial
- Protozoan
- Viral
- Nutritional

(b) **Give two signs that would indicate that a cow has died of anthrax. (1 marks)**
- Lack of stiffness of the carcass/lack of rigor mortis
- Production of tar –like watery blood from all body openings
- Extensive bloating
- Failure of blood to clot quickly

13. **Give four functions of calcium in a dairy cow. (2 marks)**
- A component of milk
- Formation of the skeleton/teeth
- Blood clotting
- Nerve functioning/control milk fever

14. **State four desirable qualities of a livestock ration. (2 marks)**
- It should be palatable to the animal
- It should be balanced in terms of nutrients
- It should be highly digestible
- Free of contaminants/poisonous substances

Crutching is the cutting of wool around the external reproductive organs of female sheep(ewe) to facilitate mating

Ringing is the cutting of wool around the sheath of the penis in rams to facilitate mating

15. Distinguish between tupping and serving as used in livestock rearing. (2 marks)

Tupping is the act of mating in goats and sheep while serving is the act of mating in cattle/pigs

SECTION B (20 MARKS).

16.

(a) Identify the type of floor. (1 mark)

Slatted floor

(b) Give one reason for having the floor of the calf pen raised. (1 mark)
- To allow urine and dung to pass through
- To keep the floor dry

(c) **State three factors considered when sitting the calf pen.** **(3 marks)**

- Sheltered from strong wind and sun
- Secure from theft and predators
- Near the dairy shed
- Free from flooding/gently sloping site

17.

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

Fowl pox/Avian pox

(b) Apart from lesions, state two other symptoms of the diseases. **(1 mark)**

- Watery discharge through eyes and nose
- Difficult breathing and swallowing
- Dullness
- Loss of appetite
- Emaciation

(c). State three control measures for the disease. **(3 marks)**

- Vaccination
- Removal and killing of all affected birds
- Observe proper hygiene
- Isolation of affected bird

18.

d) Identify the camel species illustrated above. **(1 mark)**

Dromedary (*Camelus dromedaries*)

e) Give a reason for your answer in 18(a) above. **(1 mark)**

Has single/one hump

f) Give three observable feature that enable the camel species illustrated above to survive in its habitat. **(3 marks)**

- Has flaps on the nose
- Has long brittle eyelashes
- Has long limbs
- Has paddy hooves to prevent it from sinking in sand

19.

(a) Identify the mineral deficiency shown by the cow. (1 mark)

Deficiency of calcium in the blood

b) State two signs observed on a dairy cows suffering from the mineral deficiency. **(1 mark)**

- Muscular twitching
- Staggering as the animal moves
- Paralysis of limbs

c) State three methods of controlling the deficiency illustrated. **(3 marks)**

- Feed animal with diet rich in calcium
- Partial milking
- Intravenous injection with calcium salts/calcium borogluconate
- Proper feeding during gestation

SECTION C (40 Marks)

20. (a) **Describe eight control measures for cannibalism in layers**. (8 marks)

- Avoid bright light in the house
- Avoid overcrowding
- Provide balanced diet
- Control external parasites
- Hang vegetables in the house to keep birds busy
- Debeak birds which peck at others
- Cull perpetual cannibals/birds with prolapse

- Provide adequate equipment feeders, waters, perches
- Avoid introduction of new birds in the flock.

(b) Explain six factors that should be considered when selecting livestock for breeding (12 marks)

- Body confirmation is true to type
- Adaptable to the local environment
- Good mothering ability in case of females
- High production potential/high yielding/from high yielding parents
- Mild to docile temperament
- Free of physical deformities
- Young/ long productive life.
- Fast growing/good converter
- Healthy from heritable diseases and heavy parasite infestation.
- Highly prolific prolificacy

21. (a) **Describe the management practices that would ensure maximum yield of fish in a fish pond.**

- Control stocking rate
- Control water pollution
- Supply adequate feed regularly
- Provide age appropriate feed
- Aerate the water by ensuring constant inflow and outflow of water
- Control predators
- Harvest/crop fish at the correct stage of growth
- Maintain appropriate water level in the fish pond always
- Add manure or fertilizer in pond to encourage growth of planktons

(b) Describe the management practice that would ensure clean milk production in a dairy farm.

- Milking equipment should be clean
- Clean milking parlor /shed
- The udder should be clean before milking
- The milkman should be clean and healthy
- The cows should be tested for mastitis before milking
- Cows with mastitis should be milked last and milk disposed of
- The milk should be sieved after milking
- The milk should be stored in a cool dry place/proper storage
- Cow should be healthy /check the cow regularly for milk borne disease
- The milk should be covered after milking
- Avoid feeds that can taint milk
- Milk should be cooled immediately to reduce bacterial multiplication
- Clip hair around udder and flank

22. (a) **Describe the life cycle of a beef tapeworm (taenia spp). (10 marks)**

- mature segments/proglottids full of eggs are dropped with human feaces
- eggs are then release from the segments
- **cattle/pigs** ingest the eggs during grazing/feeding
- in the intestines the eggs hatch into embryo
- the embryos penetrate the intestinal wall and enter the blood stream
- the embryos first localize in the liver
- from the liver, the embryos are distributed into the muscles in the body
- in the muscles they became cysts/bladder worms/crysticercus cellulosae
- human beings get infected when they eat raw/under cooked **beef** with cysts
- in the human intestines the cyst wall dissolves, bladder worms emerge and attach on the intestinal wall
- they then develop into adult worms and start laying eggs

(b) **Explain ten measures used to control livestock diseases. (10 marks)**

- General farm hygiene/cleanliness; to ensure houses are free of pathogens
- Isolation; prevents spread of the diseases to healthy animals
- Drenching; to control internal parasites
- Treat sick animals; prevent spread of diseases
- Vaccination; to develop resistance against disease
- Control vector; prevent transmission of diseases
- Prophylaxis; avoid infection
- Slaughtering mass; prevent spread of the diseases
- Proper breeding/use healthy breeding stock to control breeding/hereditary diseases
- Quarantine; avoid spread of the disease
- Hoof trimming; minimizing occurrence of foot rot

LANJET JOINT EXAMINATION
443/1
Paper 1
Time: 2 hours

Instructions: Answer all Question in A and B

1. Explain the following terms as used in Agriculture
(i) Agricultural economics. (½ mk)
(ii) Agricultural Engineering. (½ mk)
2. State two methods that can be used to detect mineral deficiency in crops. (1mk)
3. State two conditions under which shifting cultivation is favorable. (1mk)
4. State two conditions under which seeds are seeded at high rate. (2mks)
5. How do trees help in maintaining soil fertility. (2mk)
6.
(i) Explain the meaning of opportunity cost. (1mk)
(ii) Outline condition at which opportunity cost is zero. (2mks)
7. Give three causes of hard pan in soil. (2mks)
(i) Explain the meaning of additives as used in animal feeds. (1mk)
(ii) What are the role of additive in making silage. (2mks)
8. Give four advantages of diversification in farming as a method of farming. (2mks)
9. Give reasons why Agriculture is regarded as S|cience. (2mks)
10. Differentiate between Extensive farming system and intensive farming system. (2mks)
11. Why should top dressing be done on pasture. (2mks)
12. Give reasons for innoculating legume seeds before planting. (1mk)
13.
(i) Outline the classification of pasture. (1mk)
(ii) Name four practices carried out to improve and maintain permanent pasture. (2mks)
14. Name four advantages of tissue culture procedure in plant species. (2mks)
15. Outline four mechanical method used in control of weeds. (2mks)

SECTION B

16. The diagram below shows a set of apparatus for finding the % of humus in the soil by heating.
a. Label the apparatus. (2mks)
b. Explain the steps followed in carrying out the illustrated experiment. (3mks)
17. Explain why it is difficult to control weeds that have rhizoid roots. (1mk)
18. Outline the practices that are used to train weak stem plants. (3mks)
19. Study the diagram below then annwer the question that follows.
a. Identify the method of drainage above. (1mk)
b. State other method used in draining a swampy area. (3mks)
20. Study the process of chemical water treatment below and answer the question
a. Identify the labeled parts A, B, C, D
b. Mention two substances added at B and give the function. (2mks)
c. Give three uses of water in crop production. (3mks)
d. Outline two source of water. (2mks)

SECTION C (Select only two question)

21.
(i) Explain what is planting. (½ mk)
(ii) Outline the materials used in planting. (3mks)
22.
(i) Explain five factors that affects rooting of cutting. (10mks)
(ii) Outline and explain factor that must be considered when selecting planting materials. (10mks)
23.

(i) Explain what is meant by the term seed dorminancy. (2mks)
(ii) Outline four methods of breaking seed dorminancy and explain them briefly. (8mks)
(iii) Explain five factors that should be considered in choosing seed rate. (10mks)

24.

(i) Discuss production of guatemala (trypsacum laxum) under the following sub-topics.
a. Ecological requirement. (2mks)
b. Establishment and management. (6mks)
c. Harvesting. (2mks)
(ii) Discuss methods of sowing in pasture. (10mks)

LANJET JOINT EXAMINATION
443/2
PAPER 2
TIME: 2 HOURS
Answer all questions in the spaces provided

1. Distinguish between Apiculture and aquaculture as used in animal production. (2mks)
2. Name animal disease that it is transmitted by the following parasite
   i. Brown ear tick (½mk)
   ii. Tse tse fly (½mk)
3. State the secondary and intermediate host for liver fluke (Fasciola lepatica) (1mk)
4. State four breeds of goats. (2mks)
5. Outline the function of the Crop in the digestive system of hen. (1mk)
6. Give reasons why animal are restrained. (2mks)
7. Outline four viral disease in livestock. (2mks)
8. State three method of selection in livestock. (2mks)
9. Explain how to prevent cannibalism among poultry. (3mks)
10. Give the importance of additives in livestock feeds. (2mks)
11. Outline three types of calf pen. (2mks)
12. State four advantages of movable calf pen. (2mks)
13.
    i. Explain mating in livestock. (3mks)
    ii. Outline three methods of mating in livestock. (3mks)
14. Explain the reason why scrotal sac should distend an contract in various temperature state. (2mks)
15. Define the following terms
    i. Mothering ability. (1mk)
    ii. Prolificacy in livestock. (1mk)
16. Explain what is pre-disposing factor. (1mk)
17. Name four pre-disposing factors that pre-disposes livestock to diseases. (2mks)
18. Give functional differences between rumen and abomasum. (2mks)
19. Which equipment is used to administer:
    i. Solid taplet during deworming. (1mk)
    ii. Liquid drug during deworming. (1mk)

SECTION B(30MKS)

20.
    i. Briefly explain how three-host tick completes it life cycle. (4mks)
    ii. Why is controlling tick using acaridae not efficient in hand in hand spraying method. (2mks)
21. Name the common parts of animal that ticks are likely to be found. (2mks)
22. State the diseases that ticks causes in livestock. (2mks)
23.
    i. State the process of ascertaining whether egg are viable for incubation. (1mk)
    ii. Briefly explain the procedure of the named process above. (4mks)
24.
    i. Give a reason why should calf pen have slatted floor. (2mks)
    ii. Outline the features of calf pen. (4mks)
25. Explain the reason why calf houses should be singly. (2mks)
26.
    i. Explain what is milk secretion process. (1mk)
    ii. Identify the structure of the mammary gland of a cattle. (4mks)

SECTION C (Answer any two questions)

27.

(i) Explain the process of milk-let down process in livestock. (10mks)

(ii) Outline factors that influence milk let down in animals. (5mks)

(iii) Outline factors that determine the cleanliness of milk. (5mks)

28.

(i) Outline the signs of heat in cattle. (5mks)

(ii) State five causes of stress in poultry. (10mks)

(iii) Using Pearsons square compute a ration with 20% DCP.
Show your working. (5mks)

29.

(i) Explain farming practices that contributes to minimum tillage. (5mks)

(ii) Give the limitation of using artificial insemination in cattle. (5mks)

(iii) State and explain factors to be considered in selection of animals for breeding purposes. (10mks)

LANJET JOINT EXAMINATION
443/1
Paper 1
AGRICULTURE
Instructions: Answer all Question in A and B

1. Explain the following terms as used in Agriculture
   i. Agricultural economics. (½ mk)
   This is minimizing the scare resource to realizes maximize profit realization
   ii. Agricultural Engineering. (½ mk)
   Is branch of agriculture that deals withj operation of machines and maintenance and also building/construction of farm structure.
2. State two methods that can be used to detect mineral deficiency in crops. (1mk)
   Soil sampling /sampling
   Use of PH meter
3. State two conditions under which shifting cultivation is favorable. (1mk)
   Where land is owned communally
   Where land is abundant
4. State two conditions under which seeds are seeded at high rate. (2mks)
   Where seed used is not pure
   Where germination percentage is low
5. How do trees help in maintaining soil fertility. (2mk)
   It help in compacting the soil, reducing soil erosion
   The leaves decomposes to increase soil fertility
   Act as wind breakers that help in controlling soil erosion
6.
   i. Explain the meaning of opportunity cost. (1mk)
   Opportunity cost Is the value of forgone good/alternative
   ii. Outline condition at which opportunity cost is zero. (2mks)
   where goods are given for free
   where there is no alternative
   where good are scarce
7. Give three causes of hard pan in soil. (2mks)
   Caused by cultivating at the same depth for long time.
   Working on wet soil.
   Using heavy machines after onset of rain.
8.
   i. Explain the meaning of additives as used in animal feeds. (1mk)
   There are feed component added to feed to increase the palability of feed in animals.
   ii. What are the role of additive in making silage. (2mks)
   Make feed more palatable
   Increases the appetite in animals
9. Give four advantages of diversification in farming as a method of farming. (2mks)
   Mixed farming help in utilization of small piece of land.
   The farmer benefits from another enterprise if one fails.
   There is mutual benefit among the two existing enterprise.
10. Give reasons why Agriculture is regarded as Science. (2mks)
    Agriculture involve study of intomology
    Breeding techniques/genetics
    Farm machinery operations
    Soil analysis
    Control of pest and diseases.
11. Differentiate between Extensive farming system and intensive farming system. (2mks)

Extensive farming –this is a system whereby large tracts of lands are used with low investment while intensive farming is a system is system of farming that involve use of small pieces of land with high capital investment.

12. Why should top dressing be done on pasture. (2mks)
    To increase the rate of regeneration of pasture
    To increase the palatability of pasture
13. Give reasons for innoculating legume seeds before planting. (1mk)
    Inoculation of seed made it to have nitrogen and also prevent attack from soil-borne diaseases.
14.
    i. Outline the classification of pasture. (1mk)
    Pure stand pasture
    Mixed stand pasture
    ii. Name four practices carried out to improve and maintain permanent pasture . (2mks)
    Top dressing
    Weeding
    Removal of foreign crops
15. Name four advantages of tissue culture procedure in plant species. (2mks)
    Give rise to pure crop free-from diseases
    Increase the rate of maturity to crop
    Facilitate production of many plantlets
    Good characteristics can be develop from single plant
16. Outline four mechanical method used in control of weeds. (2mks)
    Mechanical weeding
    Hand uprooting of weeds
    Slashing
    Digging weeds out

SECTION B

17. The diagram below shows a set of apparatus for finding the % of humus in the soil by heating.
a. Label the apparatus. (2mks)
    (i) Desiccator
    (ii) Burnt soil
    (iii) Wire gauze
    (iv) Tripod stand
    (v) Bunsen burner
b. Explain the steps followed in carrying out the illustrated experiment. (3mks)
    Obtain fresh soil in the farm
    Weigh the soil
    Burn the soil
    Record the weight after burning
18. Explain why it is difficult to control weeds that have rhizoid roots. (1mk)
    The rhizoid root can remain viable even long period of dry conditions awaiting the start of rains.
19. Outline the practices that are used to train weak stem plants. (3mks)
    Staking
    Propping
    Threlishing
20. Study the diagram below then annwer the question that follows.
a. Identify the method of drainage above. (1mk)
    Cambered bed drainage system
b. State other method used in draining a swampy area. (3mks)
    French drain
    Use of pipe
    Planting of certain tree types

21. Study the process of chemical water treatment below and answer the question

a. Identify the labeled parts

A	Intake tank	(½ mk)
B	coagulation tank	(½ mk)
C	sedimentation tank	(½ mk)
D	Control tap	(½ mk)

b. Mention two substances added at B and give the function. (2mks)
Alum and its function is to enable sedimentation of dirts

c. Give three uses of water in crop production. (3mks)
Hydration of plant cells
Turgidity in plant
Act as a medium of metablic reaction in plant

d. Outline two source of water. (2mks)
Rain water source
Sub surface sources(borehole)
Surface sources(dam,rivers lake etc)

SECTION C(Select only two question)

22.

i. Explain what is planting. (½ mk)
Planting is placing the seed into the soil for the purpose of germinating and growing into a new plant.

ii. Outline the materials used in planting. (3mks)
Seeds
Vegetative materials
Stem cutting
Tubers

23.

i. Explain five factors that affects rooting of cutting. (10mks)
Temperature ×2
Relative humidity×2
Light intensity×2
Oxygen supply×2
Chemical treatment×2
Leaf area.Explain×2

ii. Outline and explain factor that must be considered when selecting planting materials. (10mks)
Suitability to the ecological conditions
Purity of the planting material germination percentage
Certified seeds×2 For any explanation

24.

i. Explain what is meant by the term seed dorminancy. (2mks)
Seed dormancy is period in which seed cannot germinate even if all the required conditions are made available.

ii. Outline four methods of breaking seed dorminancy and explain them briefly. (8mks)
Heat treatment method
Mechanical treatment method
Chemical treatment method
Soaking water
Scarification method explanations ×2

iii. Explain five factors that should be considered in choosing seed rate. (10mks)
The amount of nutrients in the soil
The germination percentage of seed
The purity of the seed

25.

(i) Discuss production of guatemala (trypsacum laxum) under the following sub-topics.

a. Ecological requirement. (2mks)

Guatemela requires high altitude areas but affected by extreme cold.
Ecology of altitude above 2000m above sea level/
Rainfall 900mm/year and should be well distributes

b. Establishment and management. (6mks)

Preparation of land should be done early enough before on set of rains
Harrow the land to get medium tilth
Remove all perennial weeds
Planting stem cutting are used /splits seeds can also be used to establish
Plant them ½ meter apart within the row. planting should be done during inset of rains.
Apply fertilizer during plantation NPK 20:20:0 150kg/ha
Top dressing should be done using nitrogen
Weeding should be done to keep the land weed free

c. Harvesting. (2mks)

The grass should be harvested early enough when the quality is still good.

(ii) Discuss methods of sowing in pasture. (10mks)

Direct sowing
Undersowing
Oversowing.Explanantion×2

LANJET JOINT EXAMINATION
443/2
Paper 2
AGRICULTURE

1. Apiculture is rearing of bees in special structures called beehives.While aquaculture is rearing of fishes in structures called ponds. (2marks)
2. i. East coast fever ECF ($^1/_2$marks)
   ii. Nagana (Trypanumiasis) ($^1/_2$marks)
3. Secondary-pigs
   Intermediate-water snails (1mark)
4. Toggenberg
   Ango-Nubian
   Sannen (2marks)
5. Stores food temporarily before moving it to the stomach (1mark)
   Moistens the food
6. Animals are restrained for safety of handling person
   To avoid injuring themselves
   Animals are restrained for safety of handling person (2marks)
7. Rinderpest
   Blue tongue
   Foot and mouth disease (2marks)
   Anthrax
8. Mass selection
   Contemporary comparison
   Progeny testing (2marks)
9. Correct any practice which may have lead to cannibalism
   Darken the room by adjustive light intensity
   Curl the aggressive birds
   Regulate the temperatures (3marks)
10. They ensure feeds are portable
    Enhances the flavor to meet the needs
    They are anti-bodies (2marks)
11. Movable calf pen
    Permanent calf pen
    Concrete floor calf pen (2marks)
12. Reduces mortality rate among calf
    No build-up of pest and diseases
    Evenly distribution of manures (2marks)
13.
i. This is the process of introduction of sperms into the female reproduction for eggs to be fertile
ii. Natural mating
    Artificial insemination (3marks)
14. The production of sperms requires a temperature that is slightly lower than the body temperature (2marks)
15. i) This is the ability of an animal to produce a large number of viable little ones at a time (1mark)
    ii) These are both internal and external conditions that cause a problem to a young animal
16. These are both internal and external conditions that cause a problem to an animal.
17. Injuries on the skin
    Age of the animal
    Colour of the animal
    Changes in climatic condition (2marks)
18. In rumen pregastric fermentation and breakdown of feeds occurs while abomasum feeds occur (2marks)

19 i) Bolus gun (1mark)
ii) Drenching gun (1mark)

SECTION B(30MARKS)

20.

i. They feed on three different hosts.They drop to the ground and lay eggs,after mating the egg hatches into a larvae which mature into nymph.The nymph climb on the fur host feed encaged and drop moult into young adult and climb on the sexual host feed encaged and drop again and climb onto the herd host it where it moults into an adult feeds and mates and drops to lay eggs

ii. The chemicals cannot reach all hidden parts of the animals
Not efficient in spraying large herd of cattle

21. The neck region
The armpits region
Inside between the hooves
Around the udder region (2marks)

22. East coast fever
Anaplasmosis disease (2marks)

23.

i. Egg candling (1mark)

ii. A candling lamp consisting a strong electric bulb covered by plastic or aluminum container that has a fewing aperture is used (4marks)

24.i. To avoid accumulations of animal water
Makes cleaning process easy (2marks)

ii. - Draught free
- Well ventilated
- Should be leak proof
- Should be singly (4marks)

25. - To avoid calf licking each other.This might cause accumulation of hair balls
- To avoid spread of disease among the calves

26. i. This is a process of lacto genesis, which involves initiating milk production process.
ii. Alveoli
- Lobule containing
- Gland cistern
- Teat cistern
- Teat meatus (4marks)

27.

i) The process of milk let-down occurs naturally when animals are stimulated by either presence of calf or any stimulant.
Milk secreted moves to the gland cistern through duct from the alveolus region.
Oxytoan hormone causes contraction of the udder muscle forcing milk down the teats.
The hormone lasts for about7-10 minutes .Cow should be milked while the hormone lasts.

ii) Presence of calf
Presence of milk person
Rattling of milking vessel
Massaging the udder with warm water (5marks)

iii) A healthy lactating cow
Clean milk person
Hygiene in milking parlour
Clean equipments
Proper handling of milk

28.

i) Restlessness
Moving too much
Mounting on other animal

Standing still when mounted
Slight increase in body heat (5marks)

ii) Presence of predator in the house
Abrupt changes made of provision of feed
Inhuman handling of the birds
Presence of intruders in the chicken house (10marks)

29.

i) Use of biological methods to control pest
Use of organic fertilizer
Using horticulture
Mulching and using a cover crop
Timely cultivation to prevent weeds growth
Strip cultivation
Slashing and uprooting

ii) Harmful characteristics can be spread easily by one ball
Requires skilled personnel to perform
Few chances of conception –semen may die
It is labourial (5marks)

iii) Age
Level of performance
Fertility
Physical fitness
Body conformation
Suitability of the animals (10marks)

BOKAKE JOINT EVALUATION
(443/1)
AGRICULTURE
PAPER 1
(THEORY)

SECTION A (30 Marks)
Answer ALL questions in the spaces provided

1. State four advantages of using farm yard manure. (2mks)
2. State four merits of minimum tillage in crop production. (2mks)
3. Mention four practices carried out to maintain grass pastures. (2mks)
4. List the four types of land reform programmes. (2mks)
5. Mention four cultural methods of weed control used in crop production. (2mks)
6. State four ways of overcoming extremes of temperature in crop production. (2mks)
7. List five precautions observed in harvesting tea to ensure high quality produce. (2 ½ mks)
8. List three ways in which primary cultivation can be achieved. (2 ½ mks)
9. An agriculture student was advised to apply complete fertilizer 40:30:10 in a (20mx10m) plot and at the rate of 400kg per hectare.

(i) Calculate the percentage of P_2O_5 in the complete fertilizer. (2mks)
(ii) Calculate the amount of fertilizer the student would require for the plot. (2mks)

10. State four branches of horticultoral farming. (2mks)
11. List four methods commonly used for applying nitrogenous fertilizers. (2mks)
12. Name four factors influencing soil formation. (2mks)
13. A farmer owns one hectare on which he can grow maize whose yield is 15 bags/hectare but has chosen to grow sorghum whose yield is 20 bags/hectare. If maize is sold at Shs. 1200 per bag while sorghum is sold at Shs. 700 per bag. Calculate the opportunity cost. (2mks)
14. State four characteristics of plants used for preparation of green manure. (2mks)

SECTION B (20Marks)

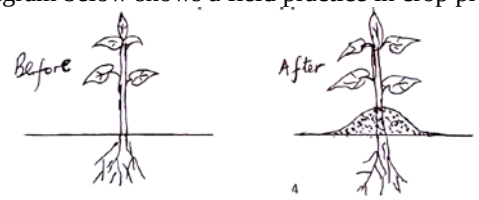
15. Students in an agriculture class set out to investigate the constituents of soil sample from school. They carried out a series of tests on various portions of the sample. They then prepared a table as shown below:

Description	Quantity
Mass of an empty evaporating disk	10g
Fresh soil on evaporating disk	35g
Mass of dried soil at 105oC on evaporating disk	28g
Vol. of water in the tin	250cm^3
Vol. of water and soil after stirring	410cm^3
Mass of empty silica disk	15g
Mass of silica disk and soil after ignition	45g
Mass of silica disk and dried soil before ignition	65g
Volume of water and soil before stirring	500cm^3

a) i) Calculate the percentage of soil water in the sample. (1mk)
ii) Why was the soil heated at 105^0C? (1mk)
b) Calculate the percentage of soil air in the sample? (1mk)
c) Calculate the percentage of soil organic matter in the sample. (1mk)
d) Name one other soil constituent not tested above. (1mk)

16. i) The diagram below shows a construction on farm. Use it to answer the questions that follow
a) Identify the structure (½mk)
b) State four areas where water in the channel is directed to (2mks)

ii) The diagram below shows a field practice in crop production



a) Identify the practice. (^{1}/2mk)
b) State two advantages of the practice named in (a) above to Irish potatoes. (2mks)

17 Use the diagram below to answer the questions.

(a) Identify the sorghum variety shown above. (1mk)
(b) State two bird pests that commonly attack the crop. (2mks)
(c) Name two other varieties commonly grown by farmers. (2mks)

18. Study the illustration below of a tomato fruit and answer the questions that follow

(a) Name the pest labelled **Z**. (1mk)
(b) State **two** characteristics symptoms of attack by the pest named in (a) above. (1mk)
(c) State **two** cultural control measures of the pest named in (a) above. (1mk)
(d) Apart from pest **Z** identified above name ***two*** insect pests of tomatoes. (2mks)

SECTION C (40 Marks)
ANSWER ANY TWO QUESTIONS

19. (a) Discuss six biotic factors that influence agricultural production. (6mks)
(b) Describe four methods of breaking seed dormancy (4mks)
(c) Describe five nursery management practices (5mks)
(d) Explain five reasons why use of chemicals to control pests should be discouraged. (5mks)

20. (a) Describe the harvesting of pyrethrum (5mks)
(b) State four precautions when harvesting pyrethrum (4mks)
(c) Explain six cultural methods of disease control (6mks)
(d) Explain five methods of water harvesting (5mks)

21. (a) Describe carrot production under the following sub-headings
(i) Field management practices (3mks)
(ii) Land Preparation (3mks)
(b) Explain five factors that determine the stage in which crops are harvested (5mks)
(c) Explain four factors determining the depth of planting (4mks)
(d) Describe five effects of strong wind on agricultural production (5mks)

BOKAKE JOINT EXAMINATIONS
443/2
Agriculture
Paper 2
Time: 2 Hours

SECTION A(Answer all questions in this section)

1. Name four rabbits breeds reared in Kenya (2marks)
2. State four reasons why dorper breed of sheep is good for mutton production (2marks)
3. Distinguish between curative drug and prophylactic drug as used in livestock production (2marks)
4. Name two functions of the crop in the digestive system of chicken (1marks).
5. List four mineral deficiency disorders in livestock (2marks)
6. State two methods that are used in selection of breeding stock in livestock (1marks)
7. Identify two methods of extracting honey from combs (1mark)
8. Outline two ways of caponisation in poultry (1marks)
9. Differentiate between mothering ability and prolificacy (1marks)
10. List four disease of poultry that are controlled by vaccination (2marks)
11. Give four reasons for controlling livestock diseases (2marks)
12. A cow was diagnosed with the following symptoms; swollen feet, animal walking with a limping gait, lameness and pus with rotten smell oozing out of the hooves and animal spending most of time lying down.

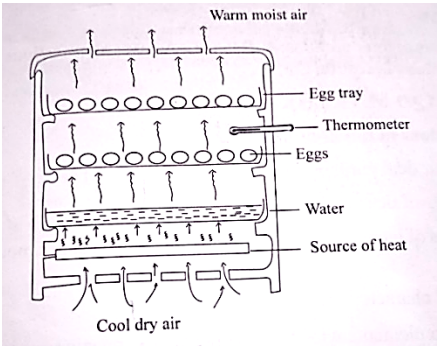
a) Suggest the disease the animal was suffering from (1 mark)
b) Name the possible cause of the disease (1 mark)
c) Apart from cattle name other two farm animals attacked by the above disease (2marks)
d) State four control methods of the disease (2marks)

12. Give two reasons for turning eggs regularly during incubation (1 mark)
13. State four signs of broodiness in a hen (2 marks)
14. What is dry cow therapy (1mark)
16. Give the main reason for each of the following in dairy farming;

a) Milking quickly and evenly (1 mark)
b) Milking at regular times (1 mark)
c) Complete milking (1 mark)

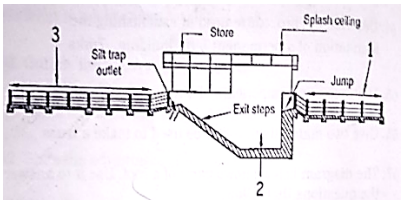
SECTION B

17. Below is an equipment used in poultry production?



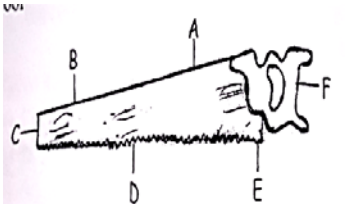
a) Identify the structure (1 mark)
b) State the main function of the structure (1 mark)
c) Give the function of the following parts in the structure (3 marks)
   i. Water
   ii. Source of heat
   iii. Thermometer

18. The following is a type of a farm structure



i. Identify the structure (1 mark)
ii. Name the parts labelled I and 3 (2 marks)
iii. Give the uses of the parts named in (ii) above (2 marks)

19. The diagram below shows the general parts of a woodwork tool



i. Identify the tool . (1 mark)
ii. Name the parts labeled C, D, and E. (3marks)
iii. State one maintenance practice carried out on the part labelled F. (1 mark)

20. The diagram below represents an external parasite.

a. Name the parasite. (1 mark)
b. List two harmful effects of parasite shown above. (2 marks)
c. State two control measures of the parasite named in (a) above. (2 marks)

SECTION C

21. a) Discuss the economic importance of parasites. (10 mark)
b) Describe the ideal body conformation of a dairy cattle. (10marks)
22. a) Describe the causes that may lead to egg eating in poultry. (5 marks)
b) State the causes of cannibalism in poultry. (5marks)
c) Describe the management of deep litter system. (10 marks)
23 a) Describe five characteristics of goats which make them survive in the arid regions. (10 marks)
b) Discuss the management of bees under the following subheading.
i. Siting of an apiary. (5 marks)
ii. Pests and predators control. (5 marks)

BOKAKE FORM IV JOINT EVALUATION
(443/1)
PAPER 1
(THEORY)

MARKING SCHEME
SECTION A:(30 MARKS)

1.
- Improves soil structure/water holding capacity
- Supply variety of soil nutrients
- Locally/easily available
- Has long residual effect
- Promote microbial activities
- Buffers soil PH 2mks

2.
- Reduce cost of production
- Control soil erosion
- Maintain soil structure
- Prevents exposure of humus
- Conserve moisture
- Prevents disturbance of roots 2mks

3.
- Top dressing
- Controlled grazing
- Topping/cutting back
- Re-seeding
- Control of pests e.g.,moles 2mks

4.
- Land tenure reform
- Land consolidation
- Land adjudication and registration
- Settlement and resettlement 2mks

5.
- Mulching
- Cover cropping
- Timely planting
- Use of clean seeds
- Proper spacing
- Clean seed bed
- Flooding 2mks

6.
- Planting crops adaptable
- Planting early maturing crops
- Irrigation
- Timely planting
- Planting drought resistance crop varieties
- Growing crops under greenhouses 2mks

7.
- Pick two leaves and a bud
- Put in woven baskets
- Do not compress the leaves

- Keep under shade as picking
- Deliver to factory same day $2^1/_{2mks}$

8.

- Hand digging
- Mechanical cultivation
- Use of an ox-plough $1^1/_2$mks

9.

i) Total ratio=40+30+10=80
30/80x100=37.5% 2mks

ii) 1 hac =10,000m^2
Area of plot =20x10=200m^2
1 hac=10,000m^2=400kg
200m^2=$\frac{400x200=8kg}{10,000}$ 2mks

10.

- Olericulture
- Pomoculture
- Floriculture
- Arboriculture/landscape horticulture 2mks

11.

- Broadcasting
- Side dressing
- Foliar spraying
- Drip
- Fertigation 2mks

12.

- Parent rock
- Living organism
- Time
- Climate
- Topography 2mks

13.

Returns for maize = 15 bags x 1200 = shs 1800
Returns for sorghum =20 bags x 700 = shs 1400
Opportunity cost =shs 1800-shs 1400
=sh400 2mks

14.

- Highly vegetative /leafy
- Fast growth rate
- High N_2 content
- Hardy

SECTION B (20 MARKS)

15.

a) I) 35kg-28kg=7kg
7/35x100=20% 1mk

ii) To evaporate/expel the moisture

b) 500cm^3-410cm^3=90cm^3
90/250x100=36% 1mk

c) 65kg-45kg=40% 1mk

d)

- Soil living organism

- Soil mineral matter/inorganic 1mk

16.

i) a) Cut- off drain/Diversion ditch $^1/_2$mks

b)

- Natural water ways e.g,river
- Non-erodable story/rock ground
- Grass land with grass cover
- Artificial waterway 2mks

ii) a) Earthing up $^1/_2$mks

b)

- Improves tuber formation
- Promotes production of seeds
- Improve drainage
- Provide support 2mks

17 a)Compact panicle 1mk

b)

- Sudan diotch
- Weavers
- Starlings 2mks

c)

- Open panicle
- Goose necked 2mks

18. a) American bollworm 1mk

b) -Bores round holes on fruit walls

-Presence of refuse from feeding of the worm on the fruit surface 2x1/2=1mk

c) -Crop rotation

-Plant resistant varieties

-Close season 2x1/2=1mk

d) -Tomato aphids

-Tobacco white fly

-Leafy hoppers/miners 2x1=2mks

SECTION C (40 MARKS)]

ANSWER ANY TWO QUESTIONS

19(a**) Pests**

- Lower quality and quantity
- Transmit crop diseases
- Feed on sap and transmit viral diseases
- Injure plant parts leading to secondary infection
- Lead to rotting of produce 6mks

Parasites

- Suck blood leading to anemia
- Irritate by bitting

Decomposer

- Lead to decomposition thus adding organic matter

Pathogens

- Transmit diseases
- Reduce quality and quantity of produce

Pollinators

- Lead to cross pollination new improved varieties

Nitrogen fixing bacteria

- Convert nitrogen from air to nitrates

- Make soil more textile when leguminous crops are grown

(b)

- Mechanical method:Scarification making seed coat permeable to water
- Heat treatment:Softening the seed coat
- Chemical treatment:Wears on the seed coat
- Soaking in water:Softens the seed coat 4mks

(c)

- Mulching-To prevent excessive evaporation and to moderate soil temperatures
- Watering-Supply soil moisture for proper seedling development
- Weed control-Reduces competition for growth resources
- Pest and disease control-Grow healthy and vigorously
- Hardening off-Adapt to the prevailing ecological conditions in the seed
- Pricking out-Reduce competition for growth 5mks

(d)

- Expensive to purchase
- Most are non-selective thus kill useful insects
- Some develop resistance to some pesticides
- Indiscrimate use interferes with the ecosystem
- Requires skill in handling and application 5mks

20.(a) (1)Pick only those having horizontal petals (ray flower)with 2-3 rows of disc florets open
(2)Use fore fingers and thumb
(3)Picking intervals 14-21 days depending on weather conditions,clone used and soil conditions
(4)Pick by twisting stem so that no stem is attached
(5)Put the picked flowers in woven basket 5mks

(b)

- Picked flowers should be put into an open woven basket to allow proper ventilation
- Polythene bags and tins should not be used during picking due to fermentation
- Flowers should not be compacted during picking they will heat lowering pyrethrum content
- Wet flowers should not be picked as they heat up and ferment
- Break flower stalks to maintain quality 4mks

(c)

- Using healthy planting materials
- Field hygiene i.e.,Burning of diseased crop residue
- Proper seedbed preparation to control armillaria root in tea or coffee
- Heat treatment i.e.,Ratio stunting disease in sugarcane
- Proper drying of cereals and pulses before storage
- Use of disease resistance varieties i.e,Ruiru II and Batian resistance to CBD and leaf rust

(d)

- Weirs and dams
- Ponds
- Roof catchment
- Use of wells
- Retntion ditches/level terrace
- Rock catchment
- Micro-climate 5mks

21 (a)

(i)- Thinning-done two weeks after germination to attain a distance of 3-4 cm between plants within rows

- Weeding keep field weed free and earth up around the roots
- Top dressing-after weeding apply 60kg N/ha

ii) Seed bed dug well depth of 20cm and harrowed to fine tilt

- Manure should not be applied as it induces forking thus lowering crop quality 3mks

(b)

- Purpose/intended use of crop i.e.,Grains when mature silage at silky stage
- Market demand i.e.,Maize dug/green
- Concentration of required chemicals i.e.,Tea and coffee
- Weather conditions i.e.,Done during dug season
- Prevailing market price and profit margins 3mks

(c)

- Soil type
- Soil moisture
- Type of germination
- Size of seed 4mks

(d)

- Increase the rate of evaporation of moisture from the soil
- Causing lodging in cereals land damage to crops
- Blowing away and bringing rain bearing clouds
- Acting as agent of seed dispersal
- Acting as agent of soil erosion
- Increasing evaporation rate
- Increasing the spreading of pests and diseases
- Destroy farm structures
- Areas of high humidity tend to be hotter but when wind takes away atmospheric water,cooling effect occurs

BOKAKE JOINT EXAMINATIONS
PAPER 2
MARKING SCHEME
SECTION A

1. New Zealand white/Kenya white
   California white
   Chinchilla
   Flemish giant
   Earlaps
2. Produce high quality carcass
   Is highly prolific
   Grows faster and matures early
   Adapted to hot dry areas
3. Curative drug is a drug administered when an animal is sick/already infected while prophylactic drug is a routine drug administered to an animal to prevent infection.
4. Softening/moistening food
   Temporary storage of food
5. Anaemia
   Milk fever
   Goiter grass stagger
   Swayback in lambs
   Parakeratosis
6. Mass selection
   Progeny testing
   Contemporary comparison
7. Heating methods
   Crushing and straining/squeezing method
   Use of centrifugal extractor method
8. Open method/surgical method
   Implanting pellets of female sex hormone beneath the skin of the bird
   Injecting with stilibestrol hormone when they are one-day old
9. Mothering ability is the ability of the mother to take care of the offspring until weaning while prolificacy is the ability of the female animal to give birth to many offspring at the same time.
10. Mareks disease
    Newcastle disease
    Fowl typhoid
    Fowl pox
11. Reduce spread of livestock disease
    Production of healthy young ones
    Promote fast growth and early maturity
    Make them have a longer productive life
    Improve the quality and quantity of products
    Reduce the cost of production
12. a) Foot rot
    b) Bacteria/<u>Fusiformis</u> <u>necrophilous</u>
    c) Sheep, goat, pigs
    d) Hoof trimming
    Treating with antibiotics
    Isolate sick animals
    Avoiding muddy conditions/hygiene
    Allow animals to walk in footbath of copper Sulphate
13. To make sure warmth is distributed evenly on the egg for uniform embryonic development
    To prevent the germinal disc from sticking on the eggs

14. Hen produces a characteristic cracking sound
Hens are aggressive when approached
Hens pluck off feathers to make a nest
Hens sit on eggs for a long period after laying
Hens stop laying eggs
15. The application of antibiotics in to the teat canals of the cow udder after drying the cow to prevent mastitis/bacterial infection
16. a) Hormone oxytocin lasts for five to seven minutes
b) Milk letdown is initiated when milking time is reached
c) Prevent drying of the cow
Prevent reducing milk yield
Prevent mastitis infections

SECTION B

17.(a)Incubator
(b)Artificial hatching of eggs
(c)Water gives the required relative humidity
Source of heat provide the required warmth
Thermometer determine the actual temperature in the incubator
18.(i)Plunge dip
(ii)Foot bath
Draining race
(iii)Foot bath – to wash the feet of the animal before they get into the dip wash
Draining race – drains back the dip wash back to the dip tank
19.(i)Hand saw
(ii)**C** – toe **D** – teeth **E** – heel
(iii)Repair if broken
Replace if broken
20.(a)Biting louse/louse
(b)Causes irritation
Reduce the quality of skin and hide
Reduced production in birds
(c)Smearing perches in poultry house with volatile insecticides
Spraying/washing/dusting animals with appropriate insecticides
Keeping animals' houses clean
Dusting birds with sodium fluoride

SECTION C

21.(a)Parasites may transmit diseases
Parasites lower production
Parasites lower the quality of products
Parasites retard growth in animals
Parasites control increases cost of production
They damage some body organs e.g. liver
They may cause death by blocking the gut
Parasites cause irritation which lower the performance of live stock
Some parasites may cause diseases e.g. anaemia
Wound caused by external parasites may lead to secondary infection i.e. germs may enter and cause other diseases.
Parasites spread diseases from sick to healthy animals

b) Their bodies are lean
They are wedge shaped
They have large well developed udders
Their tails are long almost touching the ground
Backline is straight

They are docile/mind temperament
Teats are well spaced and are of medium size
They have well set apart and wind hindquarters to accommodate the big udder
They have larger stomach
They have long thin necks and small heads
Their muzzles are wide
Their udders are well attached
They have prominent milk veins

22.(a)Being idle
Presence of broken shells in the house
Lack of calcium and phosphorus in the diet\
Leaving eggs uncollected for a long period of time
Bright light in the nest
Lack of enough laying nest
Inadequate food

(b)Introduction of new birds
Overcrowding
Presence of external parasites
Prolapse of cloaca
Presence of bright light

(c)Put litter to a depth of ten cm
Raise litter once a week to improve aeration
Provide adequate ventilation
Provide enough water and feed troughs
Provide grit
Provide foot bath at the entrance
Collect eggs twice a day
The roof should be leak proof
Walls should be strong for security
Provide greens and hang them

23.(a)Adapt well to a wide range of ecological conditions
Food requirement is low
Water requirement is low
Can feed on scarce vegetation
They are heat tolerant
They are resistance to parasites and diseases
Can move for a long distance in search of water and pasture without lowering performance

(b)(i)
Away from busy places
Protected/shielded from cold weather
Availability of food/flowers
Away from noise
Availability of water

(ii)
Honey badger – feeds on honey – controlled by hanging the hive with wire s that it can swing
Ants – feeds on honey – controlled by dusting the base of posts/poles with suitable insecticide
Wax moth (larval stage) – feeds on honey combs – controlled by ensuring the hive is fully sealed to prevent entry of moth.
Bee louses – attacks bees – controlled by disinfecting hives before stocking or puff some creosote smoke into the hives
Birds (especially Chester bee eater) – controlled by putting wire mesh around the hives

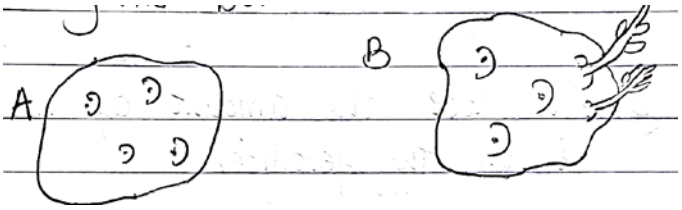
KAPSABET
443/1
PAPER 1
2 hours
SECTION A:

Answer all the questions in this section (30 Marks)

1. Name three branches of horticulture (1½ marks)
2. List three aspects of light that influence crops growth (1½ marks)
3. a) What is mixed farming (1mark)
   b) Give three disadvantages of mixed farming to a small scale farmer. (1½ marks)
4. Give two ways how hard pans would be caused by cultivation (1 mark)
5. a) Give a reason why nitrogenous fertilizer should: (2 marks)
   i) Be stored under dry condition
   ii) Be applied in most soils
   iii) Be applied to an established crop
   iv) Be applied frequently
   b) Distinguish between complete compound fertilizer and incompletecompound fertilizer (1 mark)
6. State two mechanical methods of separating soil particles according to sizeduring soil analysis
7. Give two methods of controlling stalk borer in maize production (1 marks)
8. State two reasons why too much air in the silo is undesirable in the processof silage making (1 mark)
9. State three ways of controlling weeds in pure grass pastures (1 ½ marks)
10. Give four advantages of title deed to a farmer (2 marks)
11. Outline four advantages of a mixed-legume pasture over a pure-grasspasture (2 marks)
12. Give four management practices that promote high herbage yields in pastureproduction (2 marks)
13. Give four factors that a farmer should consider in siting a nursery (2 marks)
14. Give four benefits of using vegetable propagation in orange production (2 marks)
15. a) What is micro-catchment? (1 mark)
    b) List any four types of micro-catchments (2marks)
16. List four common bacterial diseases that affect crops (2 marks)

SECTION B: Answer all the questions in this section (20 Marks)

17. Study the diagram below.

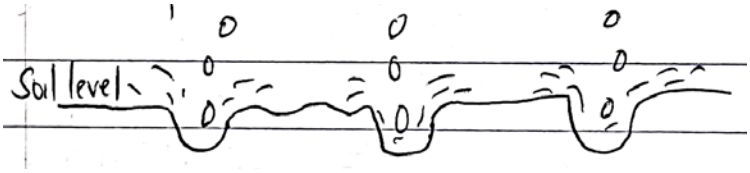


a) Name the process above used to prepare Irish potatoes in readiness forplanting (1 mark)
b) (i) Which of the two potatoes is suitable for planting? (1 mark)
   (ii) Give a reason for your answer in (b) (i) above (1mark)
c) Give two reasons why maize needs to be earthed (2 marks)

18. A farmer growing maize on 10 hectares is to dress it with sulphate ofammonia (20%N) at the rate of 120kg of S.A per hectare. At the localmarket S.A is available in 50kg bags selling at Ksh. 1500 per bag.

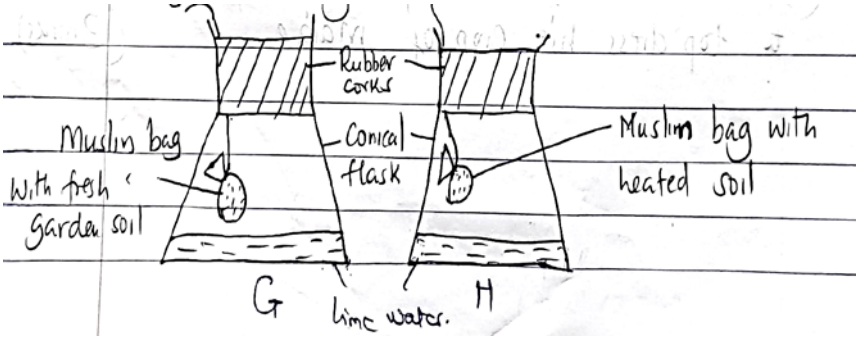
a) Calculate the amount of S.A the farmer needs to top-dress his crop ofmaize (3 marks)
b) Calculate the amount of money he will use on fertilizer (2 marks)

19. The diagram below illustrates a type of soil erosion. Study it carefully andanswer the questions that follow.



a) Identify the type of erosion above (1 mark)
b) Give two factors that may accelerate the rate of the type of erosion above (2 marks)
c) Give two effects of the type of soil erosion shown above on the farm (2 marks)

20. Study the diagrams labelled G and H



a) Give one use of setting up such an experiment (1 mark)
b) Give two reasons why the garden soil in the experiment H is heated (2 marks)
c) Briefly explain what happens to the lime water in both experiment G andH
Experiment G (1 mark)
Experiment H (1 mark)

SECTION C:
Answer TWO questions only in this section (40 Marks)

21. a) Discuss ten cultural practices of controlling pests in a crop field. (10marks)
b) Outline five factors a farmer should consider before deciding on the typeof irrigation in crop production (5 marks)
c) Describe the qualities of the mother plant that should be considered whenselecting vegetative material for planting. (5 marks)

22. a) Discuss the factors considered when drawing a crop rotation programme. (10 marks)
b) Explain the precautions that should be observed during harvesting of tea (5 marks)
c) Describe reasons for drainage as a method of land reclamation in cropproduction. (5 marks)

23. i) Describe production of onions under the following subheadings
a) Ecological requirement (3 marks)
b) Land preparation (4 marks)
c) Harvesting and marketing (3 marks)
d) Breaking the tops in onions (1 mark)
e) Two pests in onions (2 marks)
(ii) Explain seven ways soil fertility is maintained (7 marks)

KAPSABET
443/2
THEORY
PAPER 2
2 hours

SECTION A [30 MARKS]

1. Mention **four** control measures undertaken to control brucellosis in cattle. [2 marks]
2. State **four** breeds of rabbits. [2mark]
3. List any **two** physiological condition s of livestock that may be assessed to determine the health status of the animal. [1 ½ mark]
4. State **two** ways of preventing predation in a fish pond. (1 mark)
5. State **four** factors considered when selecting eggs for sale. [2 marks]
6. State **four** observations on behavior of chicks under excess heat in the brooder that a farmer may notice. [2marks]
7. State **four** advantages of embryo transplant. (2 mark)
8. Differentiate between mothering ability and prolificacy. [2 marks]
9. Name **four** practices carried out in the crush. (2 marks)
10. Give **four** reasons why young rams should be docked. [2marks]
11. Give any **two** methods of selection done on livestock. [1 mark]
12. List **four** mechanical methods of tick control in a farm. [2 marks]
13. State **two** factors that determine the quality of honey. [1mark]
14. Give the terms used to describe the following.

a. Mature male pig. (1 mark)
b. Sterilised male birds. (½ mark)
c. Mature female goat. (½ mark)

15. State **four** qualities considered when selecting a heifer for dairy purposes. [2 marks]
16. Give **one** role of a damp proof course in the foundation of a farm building. (1 mark)
17. State any four causes of cannibalism in poultry production. (2 marks)
18. Name the breed of camel with two humps. (½ mark)
19. Give the functional difference between a ripsaw and atenon saw. (1 mark)
20. Define the term steaming up as used in livestock production. (1 mark)

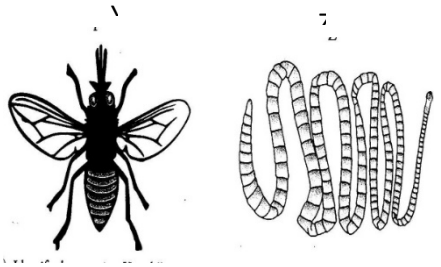
SECTION B [20 MARKS]

Answer all questions in this section

21. Below is an activity carried out in poultry production? Study it carefully then answer the questions that follow

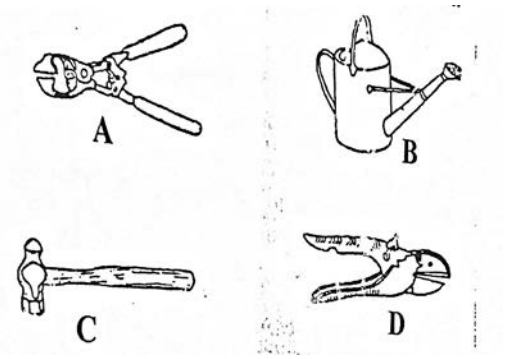
a) Identify the practice being carried out (1 mark)
b) State **three** defects that can be detected by this practice. (3 marks)
c). State **one** disadvantage of artificial incubation. (1 mark)

22. The diagram below represents livestock parasites



(a) Identify the parasites Y and Z. (1 mark)
(b) In which organ in livestock is parasite Z found? (1mark)
(c) How is parasite Z passed from livestock to human being (1 mark)
(d) Give a control measure of each parasite Y and Z (2 marks)

23. Below are illustrations farm tools and equipment
(a). Identify the tool/equipment labelled A and (2 marks)



State **two** appropriate uses of the tools labelled C (1 mark)
(b). Explain **two** maintenance practices of the tool labelled D. (2 mark)

24. A farmer wants to prepare a ration for layers containing 18% DCP. Using maize germ 20% DCP and awheat grain 10% DCP
(a). Calculate using peason's square method the amount of each food stuff needed in order to prepare 100kg of feeds. (4 marks)
(b) State any other method used in computation of food ratio. (1mark)

SECTION C [20 MARKS]

Answer all questions in this section

25. (a). Describe conditions under which bees abscond the hive (5 marks)
(b). Describe the causes of stress in poultry management. (10 marks)
(c). Describe the uses of fences on the farm. (5 marks)
26. (a). Explain **four** factors that affect digestibility of food in livestock. (8 marks)
(b). Explain the essentials of clean milk production. (7 marks)
(c). State the disadvantages of clean natural method of mating. (5 marks)
27. (a). State **four** advantages of using a sub soil in seedbed preparation. (4 marks)
(b). Give **six** advantages of artificial insemination in cattle management. (6 marks)
(c). Explain **ten** function of water in animal's body. (10 marks)

KIPSIGIS
PAPER 1
TIME 2 HOURS

SECTION A (30 Marks)

Answer ALL questions in the spaces provided

1. State **four** advantages of using farm yard manure. (2mks)
2. State **four** merits of minimum tillage in crop production. (2mks)
3. Mention **four** practices carried out to maintain grass pastures. (2mks)
4. State **four** disadvantages of nomadic pastoralism. (2mks)
5. Mention **four** cultural methods of used control in crop production. (2mks)
6. State **four** ways of overcoming extremes of temperature in crop production. (2mks)
7. List **five** precautions observed in harvesting tea to ensure high quality produce. ($2^1/_2$mks)
8. List **three** ways in which primary cultivation can be achieved. ($1^1/_2$mks)
9. An agriculture student was advised to apply complete fertilizer 40:30:10 in a (20x10) M plot and at the rate of 40kg per hectare.

(i) Calculate the percentage of P_2O_5 in the complete fertilizer. (2mks)

(ii) Calculate the amount of fertilizer the student would require for the plot. (2mks)

10. State **four** divisions of livestock farming. (2mks)
11. List **four** methods commonly used for applying nitrogenous fertilizers. (2mks)
12. Name **four** factors influencing soil formation. (2mks)
13. .A farmer owns one hectare on which he can grow maize whose yield is 15bags/hectare but has chosen to grow sorghum whose yield is 20 bags/hectare. If maize is sold at Shs.1200 per bag while sorghum is sold at Shs.700 per bag. Calculate the opportunity cost. (2mks)
14. State **four** characteristics of plants used for preparation of green manure. (2mks)

SECTION B (20MKS)

15. Students in an agriculture class set out to investigate the constituents of soil sample from school. They carried out a series of tests on various portions of the sample. They then prepared a table a shows below:

Description	Quantity
Mass of an empty evaporating disk	10g
Fresh soil on evaporating disk	35g
Mass of dried soil at 105oC on evaporating disk	28g
Vol. of water in the tin	250cm^3
Vol. of water and soil after stirring	410cm^3
Mass of empty silica disk	15g
Mass of silica disk and soil after ignition	45g
Mass of silica disk and dried soil before ignition	65g
Volume of water and soil before stirring	500cm^3

e) Calculate the percentage of soil water in the sample. (1mk)

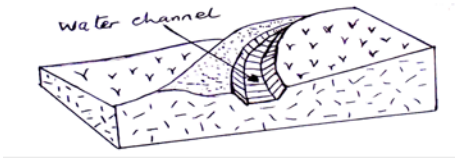
f) Why was soil heated at 105ºC? (1mk)

g) Calculate the percentage of soil air in the sample? (1mk)

h) Calculate the percentage of soil organic matter in the sample. (1mk)

i) Name **one** other soil constituent not tested above. (1mk)

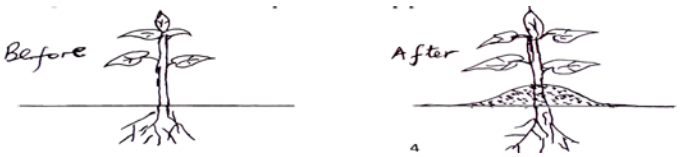
16. The diagram below shows a construction on farm. Use it to answer the questions that follow



a) Identify the above structure. (1mk)

b) State **four** areas where water in the channel is directed to: (4mks)

c) The diagram below shows a field practice in crop production.



Identify the practice. (1mk)

c) State **two** advantages of the practice named in **(a)** above to Irish potatoes. (2mks)

d) Name **two** other crops that require the above practice. (2mks)

17. Use the diagram below to answer the questions.

(a) Identify the sorghum variety shown above. (1mk)

(b) State **two** bird pests that commonly attack the crop. (2mks)

(c) Name **two** other varieties commonly grown by farmers. (2mks)

SECTION C (40MKS)

18. a) State **five** importance of budgeting in a farming enterprise (5mks)

b) State **six** ways through which farmers adjust to risks and uncertainties (6mks)

c) State **four** ways in which labour productivity can be improved in the farm (4mks)

d) State **five** importance of a title deed to a farmer (5mks)

20. a) Describe the production of maize for grain production under the following sub-heading

i) Four varieties common in Kenya (2mks)

ii) Seedbed preparation (3mks)

iii) Field practices (5mks)

b) State and explain **five** cultural methods used to control weeds (5mks)

c) State **five** effects of late defoliation of forage crops (5mks)

21. Study the table below showing quantities of fertilizers used and yield of maize obtained over a period of years and answer the questions that follow.

Land (in ha)	DAP fertilizers (in 20kg units)	Yield (90kg bags)	Marginal production(MP) (in 90 kg bags)	Average production(AP) (in 90 kg bags)
1	0	2		
1	1	10		
1	2	24		
1	3	42		
1	4	56		
1	5	62		
1	6	60		
1	7	56		

(a) i) Fill in the marginal and average product columns in the table (4mks)

ii) Using the graph paper provided draw the production function curve (6mks)

iii) Show the **three** zones of production on the graph (3mks)

b) Highlight **seven** effects of land fragmentation (7mks)

KIPSIGIS
PAPER 2
TIME 2 HOURS
SECTION A (30 Marks)

Answer ALL questions in the spaces provided

1 Name the pig breed which has the following characteristics: long, large, and white body, broad and dished face, upright ears. (½ mk)

2. Name any **two** characteristics of good quality whole milk. (1mk)

3. State **three** advantages of artificial calf rearing. (3mks)

4. State **four** qualities of clean milk. (2mks)

5. Outline **four** ways of controlling egg eating in poultry. (2mks)

6. a) Name the cause of milk fever. (½ mk)
   b) Give **one** control measure of milk fever. (½ mk)

7. State **three** field conditions under which a disc plough should be used instead of a mouldboard plough. ($1^1/_2$mks)

8. a) State **two** disadvantages of using metal frames in construction of farm building. (1mk)
   b) Give **three** reasons for seasoning timber. (1 ½ mks)

9. State **four** qualities of colostrum which make it suitable for feeding newly born calf. (2mks)

10. Name **two** dual purpose breeds of cattle (1mk)

11. Outline **four** reasons for swarming of bees. (2mks)

12. State **four** reasons for steaming up in animal production. (2mks)

13. Give **two** causes of high mortality rate in piglets. (1mk)

14. a) what is a notifiable disease? (1mk)
    b) Name **four** examples of notifiable diseases in livestock. (2mks)

15. Give **three** reasons why drenching alone is not an effective method of controlling intestinal parasites in livestock. . (1 ½ mks).

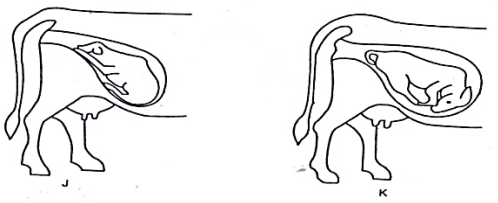
16. State **four** qualities of eggs preferred by consumers in the market (2mks)

17. Give **four** light breeds of chicken in poultry rearing. (2mks)

SECTION B (20 Marks)

Answer all questions in this section in the spaces provided after every question

18. The illustration below show different presentation of foetus at the time of birth. Study the illustrations and answer questions that follow.

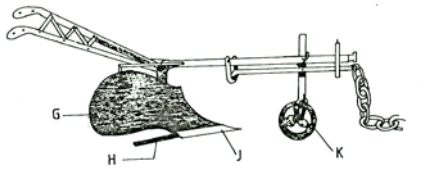


(a) What diagram represents the normal position of a calf at birth (1mk)

(b) What term is used to refer to position shown in diagram **K**? (1mk)

(c) State **three** signs of parturition in cattle. (3mks)

19. The diagram below shows a farm implement. Study it and answer the questions that follow:-

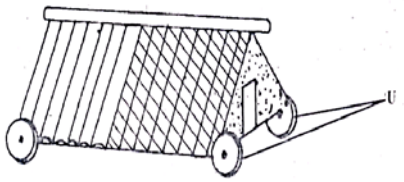


(a) Identify the farm implement illustrated above. (1mk)

(b) Name the parts labeled **G,H and J** (3mks)

(c)State **two** maintenance practices that should be carried out in the implement above (1mk)

20. The diagram below represents a poultry keeping structure.

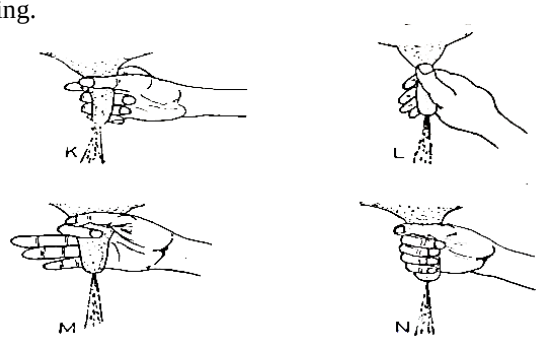


(i) Identify the structure. (½ mk)

ii) Identify the part labeled **U.** (½ mk)

iii) State the maintenance carried out on the structure illustrated above. (1mk)

21. The diagrams **K, L, M** and **N** below show four possible ways of drawing milk from the teat of a cow during milking.



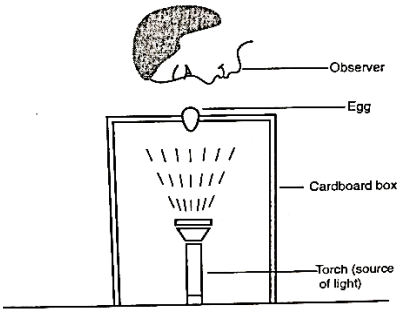
a) Which diagram shows the proper way of drawing milk? (1mk)

b) How long should it take to milk a cow from the start to the end of milking? (1mk)

c) How would a milkman ensure that no milk remains in the udder at the end of milking? (1mk)

d) Give **two** practices carried out on milk immediately after milking. (2mks)

22. Below is an illustration of an activity carried out by a poultry farmer keeping layers



a) Identify the activity carried out using the set-up. (1mk)

b) State **two** abnormalities in eggs that can be detected using the set-up above. (1mk)

c) How can a farmer improve the following?

i. Hardness of egg shells. (½ mk)

ii. Yellowness of the egg yolk. (½ mk)

SECTION C (40 Marks)

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

23 a) Describe the artificial rearing of layer chicks from day old up to the end of brooding. (10mks)

b) Describe the characteristics of a poor layer, which should be considered during culling (4mks)

c) Discuss management practices that would ensure maximum harvest of fish from the pond. (4mks)

d) Give **four** methods used in preserving fish. (2mks)

24. a) State the functions of any **six** parts of a plunge dip. (6mks)

b) State and explain **four** factors considered when selecting a breeding stock. (4mks)

c) Explain **five** mechanical methods of controlling ticks. (10mks)

25 a) State **five** advantages of embryo transplant. (5mks)

b) Describe coccidiosis disease under the following sub- headings.

i) Animals attacked (2mks)

ii) Causal organism (1mk)

iii) Symptoms (4mks)

iv) Control measures (3mks)

c) A ration containing 20% DCP for growing chicks is to be obtained by mixing ground maize containing 10% DCP and fishmeal containing 50% DCP. Calculate the amount of each feedstuff in kilograms required to prepare 200kg of the feed (5mks)

KIPSIGIS
443/2
MARKING SCHEME
SECTION A

1. Large white
2. Should be clean/ free from physical contamination
- Has the right consistency/ no water added/ true to the breed
- No strange odours/ no foul smell
- Free from diseases causing organisms
- White in colour/ normal colour/ not tainted
- Normal taste/ flavour

3.
- The calf can be reared artificially even if a mother dies during birth
- Many calves can be reared at a time
- The calf can be given correct amount of milk
- It is possible to keep clear records on milk
- Yield

4.
- Free from diseases causing organisms
- Free from dirt/ foreign materials
- Appropriate smell and flavour
- Chemical composition within the expected standards

5. Ways of controlling egg eating in poultry
- Collect eggs frequently and regularly from the laying boxes.
- Make laying boxes dark.
- Feed birds on a balanced feed to prevent mineral deficiency and harden shells.
- De-beak perpetual egg- eaters.
- Keep birds busy by hanging green leaves in the house.
  Scatter grains in the litter to enable the birds to scratch them. ($^1/_2$ x 4 = 2mks)

6. a) causes of milk fever
- Lack / low levels of calcium in blood stream. ($^1/_2$mk)

(b) Control
- Feed heavy yielding cows with mineral before and after calving.
- Treat with calcium borogluconate injection ($^1/_2$ mk)

7. - If the ground is hard.
- If there are many obstacles in the field.
- If the soil is sticky or heavy.
- If there is little organic matter to be turned into the soil.
- Where a rougher seed bed is required/ where land is liable to erosion. ($^1/_2$ x 3 = $1^1/_2$ mks)

8.(a) Disadvantages of using metal frames for construction;
- It is heavy to transport.
- It is expensive.
- Requires skill to construct / fit. (1/2 x 2 = 1 mk)

(b) Reasons for seasoning timber
- To prevent insect damage.
- To avoid fungal infestation and rotting.
- To prevent warping.
- Make it easy to work on.
- To improve its durability. (1/2 x 3 = 11/2 mks)

9. Qualities of colostrum;
- It is rich in proteins, vitamins and minerals.
- It is easily digestable.
- It contains antibodies which pass immunity from mother to the calf.

- Has laxative effect which clears the first faeces (dung) from calf's digestive system.

10 . Sahiwal
. Red poll
Simental

10. Reasons for swarming of bees.
- Shortages of food and water.
- Due to outbreak of diseases and parasites.
- Death of queen.
- Unfavorable smell / bad or odour smell.
- Too much noise.
- Death of brood (½ x 4 = 2mks)

12 - To produce well developed young animals with high birth weight
- To stimulate the alveolar cells of the udder in order to increase milk yields after calving.
- To help the cow build up enough body reserves
- To give the cow enough energy during parturition
- To accustom the cow on feeds which will be given during milking (4 x ½ = 2 marks

13. Causes of high mortality in piglets
- Overlying by the mother.
- Lack of breathing due to failure to remove mucus around nostrils at birth.
- Infection leading to scouring
- Chilling effects
- Lack of colostrum after they are born. (1/2 x 2 = 1 mk)

14(a) A notifiable disease an infectious disease which once noticed must be reported to the authorities / government authorities for the purpose of taking action. (1 mk)

(b) Examples of notifiable diseases
- foot and mouth disease
- Rinder pest
- Anthrax
- Rift valley fever
- New castle
- Avian flu in poultry
- Rabies (1/2 x 4 = 2 mks)

15. -It does not eradicate other stages of development of the parasite.
- It does not destroy the parasites in the intermediate hosts
- It does not destroy parasites in pastures, water and forage (1/2 x 3 = 11/2 mks)

16.- Oval in shape
- Brown in colour /white in colour
- Smooth shelled - Should be clean
- Should have an average weight of 57 grimes (4 × ½ =2mks)

17.- leghorns
- ancona
- Minorca
- Sykes 4 x ½ = 2mks

SECTION B

18(a) **DIAGRAM** J (1mk)

(b) Breech presentation (1mk)

(c) Signs of parturation
- The udder enlarges / full and distended udder.
- The ligament on each side of the tail relax
- The vulva enlarges
- Clear mucus discharge from the vulva
- Thick milky fluid from the teats
- A water bag appears and burst, just before calving

19.a) Ox drawn mould board plough

b) G-mould board
H-Landside
J-share

c) Clean after use
replace worn out share
Tighten loose nuts and bolts

20. (i) Poultry fold structure – ($^1/_2$ mk)

ii) U – A wheel ($^1/_2$mk)

iii) Maintenance

- Repair broken parts.
- Move the folds to a fresh ground to reduce buildup of disease and to keep hygiene
- Move it to a fresh ground to provide fresh grass and avoid accumulation of droppings and to get fresh grass. (1 x 1 = 1mk)

21. a)Which diagram shows the proper way of drawing milk. (1mk)

- Diagram N.

b) How long should it take to milk a cow from the start to the end of milking. (1mk)

- Five to eight minutes.

c) How would a milkman ensure that no milk remains in the udder at the end of milking? (1mk)

- By massaging the udder and stripping out milk from the teats.

d) Give **two** practices carried out **on milk** immediately after milking. (2mks)

- Weighing.
- Filtering/ sieving.
- Cooling/ storage.

22.a)Identify the activity carried out using the set-up. (1mk)

- Egg candling.

b) State **two** abnormalities in eggs that can be detected using the set-up above. (1mk)

- Hair cracks on the shell.
- Double yolk/ deformed yolk/ broken yolk
- Absence of yolk.
- Blood spots/ meat spots.
- Dead embryo.
- Inappropriate size and location of the air cell/air space.

c) How can a farmer improve the following? ($^1/_2$ mk)

i. Hardness of egg shells.

- Feeding calcium/soluble grit/ oyster shells to the birds.

Yellowness of the egg yolk. ($^1/_2$ mk)

ii.

- Providing green vegetation/ green vegetables to the birds

23. Ensure brooder corners are rounded

- Provide enough brooding space accordingly. Clean and disinfect the brooder house/ equipment.
- Provide wood shavings/ proper litter on the floor
- Maintain appropriate temperature range according to the age of the chicks
- Temperature during the 1st one week should be $32 – 35^0$ c, then reduce accordingly
- Spread sheets of papers and sprinkle chick mash on them
- Provide fire guard around the heat source
- Maintain proper ventilation by adjusting the openings
- Provide fresh, adequate and qualify feed/ chick mash
- Provide brooder with reliable and appropriate lighting/ dim light
- Provide adequate and appropriate waters/ feeders according to age/ number of chicks
- Remove dead chicks from the brooder
- Control parasites by applying appropriate pesticides

- Control diseases appropriately
- Isolate and treat sick chicks immediately
- Keep proper records
- Gradually change the feed in the last one week in the brooder
- Debeak 8 – 10 days towards the end of brooding
- Provide adequate clean water all the time

(b) poor layer

- Combs and wattles are small, dry and cold/ combs have white scales
- The space between the pelvic bones is narrow 2-3 fingers cannot fit in the space between the pelvic bones
- Plumage is shiny, well preened/ sometimes moulting
- Yellowish pigmentation in the vent, shanks and beak
- Space between the keel bone and pelvic bone is small / 3-4 fingers cannot fit in the space
- Eyes are dull and yellow
- Abdomen is hard
- The layer is lazy and dull
- Hen becomes broody

c) Management practices that would ensure maximum harvest of fish from the pond. (4 mks)

- Supplementary feeding with cheap food such as ground nut cakes, kitchen waste. Chicken manure
- Give just enough food to avoid rotting polluting the water
- Ensure gradual change in routine practices
- Add fertilizer or manure to increase the plant volume
- Control pests, diseases and predators
- Avoid damaging fingerlings and young fish during harvesting

d) Methods of preserving fish. (2mks)

- Freezing-
- Salting
- Sun drying
- Smoking

24.(a) a) State the functions of any **six** parts of a plunge dip. (6mks)

Part	**Function**
Animal holding yard-Has a concrete floor.	-Holding animals before dipping. -Have stones to ensure that mud from the hooves is removed before getting into the dip wash.
Foot bath	-Washing livestock feet to remove mud. -Contains copper II sulphate solution that helps in controlling foot rot.
The jump- This is a narrow entrance to the dip tank with short steps.	-Allows animals to jump singly into the dip tank.
Dip tank-It should measure 5m long at the bottom8m at the top and 1.6m deep at the highest level of acaricide.	-Holds the dip wash.
Rump or staircase	-Enables animals to climb out of the dip tank.
Draining race	-Holds livestock after dipping to let the dip wash drain back to the plunge dip.
Drying yard	-Holds animals for a while before being released to the pastures.
Silt trap outlet	-Traps mud and dung before the dip wash flows back to the dip tank
Dip tank shelter(roof)	-Lower the evaporation rate of the dip wash. -Avoid the dilution of the dip wash by rain water.
Water tank	-Stores water used for dipping purposes.
Waste pit	-Used as a damping site for sediments from the dip tank.

b) **Factor considered when selecting breeding stock**

Age – select young animals

Level of performance – select animals with high performance

Physical fitness – select animals which are free from physical defects

Health – select animals which are healthy.

Body conformation – animals with proper body conformation selected.

Behavior/ temperament – animals with bad behavior such as cannibalism not selected.

Quality of products – select animals with high quality products.

Mothering ability –select those with good mothering ability.

Adaptability – select those well adapted to prevailing climatic condition in the area.

Prolificacy – selected animals should have ability to give birth to many off springs.

c) Explain **five** mechanical methods of controlling ticks. (10mks)

i) Burning the infested pastures destroys a large number of eggs, larvae, nymphs and adults.

ii) Interfering with or altering the tick's environment in the following ways:

- Ploughing pasture land to expose the eggs to suns heat for desiccation or by burring them deeply.
- Top dressing pastures using lime or dressing using an acaricide.

iii) Fencing off the pasture land and farm combined with regular use of acaricides.

iv) Starving the ticks to death by keeping the animals away from infested pastures through rotational grazing.

v) Hand picking the ticks from livestock and killing them (de-ticking

25. a) State **five** advantages of embryo transplant. (5mks)

- It is possible to implant embryo from a high quality female to less valuable female and hence improve the performance of the offspring.
- It stimulates milk production in a female that was not ready to produce milk.
- A highly productive female can be spread over a large area to benefit many farmers.
- It is easier to transport embryos in test tubes than the whole animal.
- Embryos can be stored for long periods awaiting availability of a recipient female.

b) Describe coccidiosis disease under the following sub- headings.

i. Animals attacked (2mks)

Calves, poultry, lambs and young rabbits.

ii. Causal organism (1mk)

Coccidia of the Eimeria spp

iii. Symptoms (4mks)

- Diarrhoea which may be whitish.
- Dysentery or blood in the dung.
- Birds have ruffled feathers, dull with drooping wings.
- Animals become emaciated
- Sudden death in birds, rabbits and kids.

iv. Control measures (3mks)

- Use of coccidiostats.
- Observing hygiene.
- Isolation in cattle.
- overcrowding in a poultry house should be avoided.

c) A ration containing 20% DCP for growing chicks is to be obtained by mixing ground maize containing 10% DCP and fishmeal containing 50% DCP. Calculate the amount of each feedstuff in kilograms required to prepare 200kg of the feed. (5mks)

MANGU
AGRICULTURE
PAPER 1

SECTION A:(30MARKS)

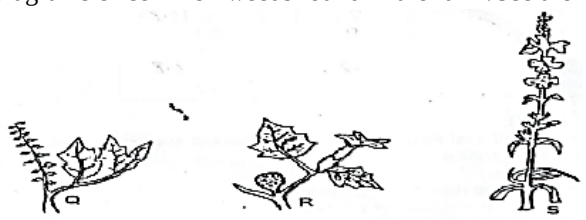
1. State **four** characteristics of large scale farming system (2mks)
2. Outline **four** factors that can make shifting cultivation practicable (2mks)
3. State **two** effects of high temperature on crop production (2mks)
4. State **two** effects of sub-soiling in land production (1mk)
5. Differenciate between soil texture and soil structure (2mks)
6. State **two** reasons why green manure is not commonly used by farmers (1mk)
7. Enumerate **four** types of farm records kept by farmers (2mks)
8. Outline **two** importance of a title deed land tenure system (2mks)
9. State reasons why it is difficult to control the following weeds (2mks)
10. What is the meaning of the following terms as used in pest control?

i) Economic injury level (1mk)
ii) Intergrated pest management (1mk)

11. State **two** varieties of beans growth in Kenya (2mks)
12. List **two** advantages of a grass-legume pasture over pure stand grass pasture (1mk)
13. Why is too much air undesirable in silage making? (1mk)
14. State four reasons for staking of tomatoes (2mks)
15. Outline two methods of breaking seed dormancy (1mk)
16. List two demerits of using seeds as planting materials (1mk)
17. Give two importance of raising seedlings in polythene sleeves compared to direct establishment on the ground. (1mk)
18. a) State three post harvesting practices carried out in crop production (3mks)
    b) List two limitations using a traditional granary in crop storage (2mks)

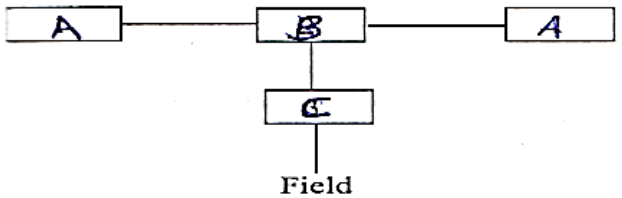
SECTION B:(20 MARKS)

19. Below are diagrams of common weeds found in the farm.Use them to answer questions that follow**.**



i) Identify weeds **Q,R** and **S** (3mks)
ii) Mention one harmful effect of weed **Q** and **R** (1mk)

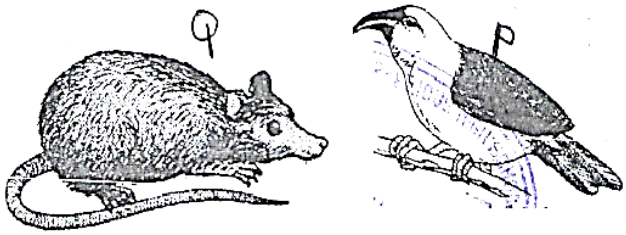
20. The diagram below is an illustration of turning a certain type of manure. Use it to answer questions that follow.



a) Name the type of manure that is turned using the above method (1mk)
b) By use of arrows,show how the manure is turned (1mk)
c) What is the significance of adding the following during the preparation of compost manure?
i) Adding well rotten manure (1mk)
ii)Adding garden soil (1mk)

iii) Adding ash (1mk)

21. Below are representations of certain pests that attack crops.Use them to answer questions that follow.



i) Identify pests **P** and **Q** (2mks)
ii) State two effects of pest Qin crop production (2mks)
iii) Highlight three methods of controlling pests (3mks)
iv) At what stage do pest **P** attack crops) (1mk)

SECTION C:(40 MARKS)
Answer any TWO questions

22. a) Explain **five** effects of soil erosion (10mks)
b) Explain **five** methods used to control crop diseases (10mks)

23. Describe production of maize under the following:
i) Ecological requirements (3mks)
ii) Seed bed preparation (4mks)
iii) Planting (5mks)
iv) Field management practices (5mks)
v) Harvesting (3mks)

24. a) Describe **ten** nursery management practices that are carried out after seed germination
b) Explain five factors to be considered when designing a crop rotational programme.

MANGU
AGRICULTURE
PAPER 2
SECTION A (30 MARKS)

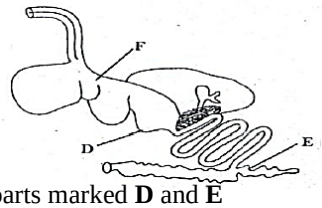
1. List two biotic factors that affect livestock production in Kenya. (1mk)
2. Outline four reasons that enable camels to live in arid areas (2mks)
3. State four reasons for dehorning in livestock (2mks)
4. State four advantages of using a spray race over a plunge dip (2mks)
5. State four reasons for seasoning timber (2mks)
6. State two types of bees (2mks)
7. State four reasons for swarming of bees (2mks)
8. Define the term caponization as used in livestock production (1mk)
9. Outline four uses of water in animals on the farm (2mks)
10. Differentiate between steaming up and creep feeding (2mks)
11. State **four** routes through which pathogens enter the body of an animal (2mks)
12. Differentiate between carrying capacity and overstocking (2mks)
13. State **four** advantages of Zero grazing unit in livestock production (2mks)
14. Name the equipment used alongside each of the following: (2mks)
    i) Trocar
    ii) Bull ring
    iii) Elastrator
    iv) Syringe
15. State four reasons that show a sow is about to furrow (2mks)
16 State two major systems of breeding in livestock production (2mks)

SECTION B:(20 MARKS)
Answer ALL questions in this section

17. Mr.Gatimu asked his daughter to mix feeds for his cows.Mr.Gatimu's daughter decided to use feedstuffs to get 15% DCP.The contents were as shown below-Fish meal 50%DCP
- Cereal meal mixture 12%DCP

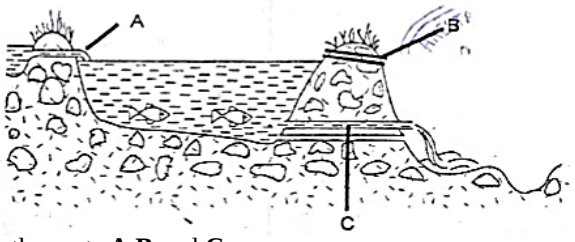
a) How much of the two feedstuffs did Mr.Gatimu's daughter mix to get a 90kg bag?

16. The diagram below illustrates a type of a digestive system



i) Name the parts marked **D** and **E** (2mks)
ii) State two functions of part **F.** (2mks)

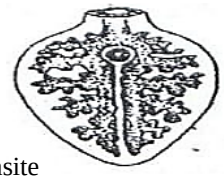
18. The diagram below shows a cross-section through a fish pond.Study it and answer the questions that follow.



a) Name the parts **A,B** and **C** (11/2 mks)
b) What is the function of part labeled **B**
c) State four factors that should be considered when citing a fish pond (2mks)

19. State four categories in which diseases in livestock are classified (2mks)

20. Below is an illustration of a livestock parasite.Study it and answer questions that follow.



i) Name the parasite

ii) State **three** symptoms that may be observed in an animal that has been attacked by the above parasite (1 1/2mks)

iii) State the intermediate host of the parasite (1/2mk)

iv) Give **two** control measures of the of the above parasite (2mks)

21. State **two** methods of extracting honey from combs (2mks)

SECTION C (40 MARKS)

Answer any TWO QUESTIONS FROM THIS SECTION

22. a) Describe **five** factors to consider when selecting a breeding stock (10mks)

b) Describe **five** control measures of diseases in livestock and give an example of a disease controlled by the measure (10mks)

23. Discuss mastitis disease under the following;

a) Casual organism (1mk)

b) Symptoms (3mks)

c) Causes (4mks)

d) Control measures (2mks)

24. a) Explain five reasons why fences are important to a farmer (10mks)

b) Explain five modern technology methods that have helped improve the quality of livestock products in Kenya (10mks)

MANGU
AGRICULTURE
PAPER 1
MARKING SCHEME

SECTION A

1.
- Use of large tracts of land
- Requires heavy capital investment
- Use of skilled labour
- High level of management
- Usually carried out for commercial purposes

2.
- When land is abundant
- Population is sparse
- Number of livestock per unit area is slow
- When land is communally owned

3.
- Increases evaporation leading to wilting in crops
- Increases the rate of growth/hastens maturity in crops
- Improves the quality of crops e.g. pineapples and oranges
- Increased incidences of disease infections and pests

4.
- Breaking up of hardpans
- Facilitates soil aeration
- Brings to the surface mineral salts

5. Soil structure is the physical appearance of soil according to the way individual soil particles are arranged, packed and aggregated while soil texture is the coarseness or fineness of soil when felt in between fingers.

6.
- Most crops used are food crops hence hard to use them as green manure.
- It utilizes most of soil moisture and leaves little for the next crop
- Microorganisms release nutrients slowly.
- It delays planting due to the longtime of decomposition

7.
- Production records
- Inventory records
- Field operation records
- Breeding records

8.
- Security of tenure
- Ability of secure loans
- A farmer can lease land using it to earn income if unable to use land
- Minimizes land disputes with neighbors

9. i) underground bulbs that remain in the soil
   ii) Presence of deep underground rhizomes
   iii) many seed which are easily dispersed
   iv) Many underground bulbs which remain in the soil

10. i) It is when the population of a pest causes damage beyond which the plant can tolerate.
    ii) Is the combination of two or more pest control methods to enhance better results

11. Rosecoco, mwezi mmoja, Wairimu, Canadian wonder, Haricot, Mwitemania, Mexican 142, French beans

12.

- More palatable than pure grass
- A guard against total failure /loss due to pest and disease attack/bad weather.
- High yields
- More nutritious/ balanced
- Better weed control
- Reduces soil erosion due to good soil cover
- Increases soil fertility
- Economizes on the use of fertilizers
- Tends to reduce bloat brought about when a legume is fed alone

13. Silage materials to decompose/rot

14.

- Production of clean fruits/high quality
- Facilitates easy spraying and harvesting of crops
- Controls incidences of disease outbreak such as blight
- Prevents infestation by soil borne diseases

15.

- Scarification/mechanical
- Heat treatment/hot water/slight burning
- Chemical treatment
- Soaking in water

16. Plants developed from seeds take long to mature

- Some seeds have long dormancy periods
- Some seeds love viability if stored for a long period of time
- Some seeds are very tiny hence difficulties in germination unless special conditions are provided

17.

- Controls root disturbances during transplanting
- Seedlings can be stored for a long period of time awaiting conducive environmental conditions for planting
- It is easy to transport seedlings
- Mixture used to fill polythene sleeves
- Is free from pests and diseases
- Seedlings establish faster in the fields

18.(a)Drying
Threshing/shelling
Dusting with suitable pesticide
Sorting
Packing
Processing

b) It is limited in size
Produce is exposed to pest attack
Roof may leak leading to rotting of stored produce
Lacks security
Can burn easily

SECTION B

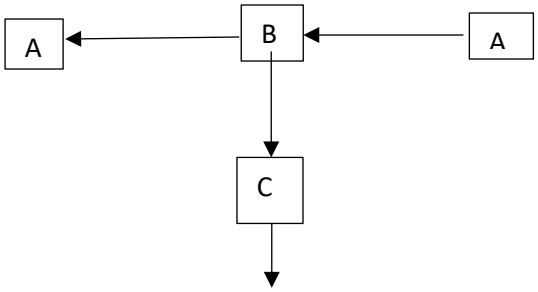
19.(i)Q – Double thorn
R – Datura stramonium/ Thorn apple
S – Striga/witch weed

(ii)Q – causes irritation to the farmer because of the thorns
R – poisonous to livestock

(iii)because it depends on the plant as a host for nutrients and survival

20.(a)manure

(b)



(c)(i) To provide food for micro- organisms

(ii)To introduce micro – organisms to the manure

(iii)To add potassium in the manure

21.(i) **P** – weaver bird

Q – rat

(ii)

- It unearths planting materials hence lowering germination percentage
- It lowers crop yield in the field and store
- Increases the cost of production

(iii)

- Use of traps
- Chasing them away/destroying their nests
- Crop rotation
- Timely planting
- Use of appropriate pesticide

(iv)At milky stage

SECTION C

22. (a)

- Poor yields due to removal of nutrients
- Uprooting of crops
- Exposes underground water pipes
- Destroys earth roads
- Removal of top soil which contains nutrients
- Siltation of dams, rivers and streams

(b)

- Crop rotation to break life cycle
- Rogueing to remove infected crops
- Early/timely planting to escape serious attack
- Planting disease free materials/certified seed
- Proper spacing to create unsuitable conditions for diseases
- Use of resistant crop varieties to prevent attack
- Use of appropriate chemicals
- Use of clean tools to prevent spread of diseases
- Quarantine to prevent introduction of new diseases to the farm
- Pruning to create unsuitable conditions for micro – organisms
- Control of vector to prevent spread
- Proper plant nutrition to make plants stronger to resist infection

23. (i)

- Rainfall 600 – 1250mm

- Altitude of up to 2200m above sea level
- Temperature – 14 – 30 ℃
- Top soils – loam/alluvial soils which is well drained
- Ph. – neutral/alkaline

ii) Prepare the land early before the onset of rains
- Remove stumps when they occur
- Plough deep during dry season to eradicate perennial weeds
- Harrow to obtain a medium tilt

iii) Plant on the onset of rains
- Select maize variety suitable for your area
- Use healthy/certified seeds
- Use a spacing of 90cm x 30cm or 75cm x 45cm
- Apply phosphate fertilizer at the rate of 200kg/ha or organic manure
- Plant by hand or planters at seed rate of 2 seeds per hole
- Depth of 2.5cm depending on the moisture content in the soil
- Cover seeds with light layer of soil

(iv) Grapping/thinning
- Weeding
- Top dressing
- Pest control – stalk borer, aphids, rodents and birds, weevils
- Diseases – smut, rusts, maize streak
- Mulching
- Watering

v) Harvested after 4 or 6 months
- Moisture content 14-28%
- Cut maize and stock in the frut to allow cobs to dry
- Remove husks by hand or combined harvester
- Dusting
- Shelling of maize cobs, dried, weighed and packed in 90kg

24. (a)
- Removal of mulch after seed germination
- Erect a shade 60cm high above the bed surface
- Carry out regular watering
- Control of weeds by uprooting
- Spray with a suitable fungicide to control fungal diseases
- Spray with a suitable insecticide to control insect pests
- Carry out rogueing in case plants are infested by a disease
- Carry out thinning where seedlings are overcrowded
- Carry out hardening off two weeks before transplanting

b) Fertility level of the soil – if the soil is infertile, include a leguminous plant
- Crop nutrient requirement – plants which require more nutrients should come first in a rotation programme
- Pest and disease incidence – plants of the same family should not follow one another in a rotation sequence
- Soil texture – where soil structure has been destroyed due to continuous cultivation, include grasses
- Weed control – some crops which act as hosts for weeds should not be part of the rotation programme where such weeds are common
- Root depth – deep rooted crops should come first to access leached nutrients before planting shallow rooted crops

MANGU
PAPER 2
MARKING SCHEME

SECTION A

1. Internal parasites
   External parasites
   Pathogens which causes diseases
2. Can survive on poor pasture
   They have hardy pads on their soles which help them to walk on sandy grounds
   They have long eye lashes to prevent entry of dust into the eyes
   Their thick hides help them to resist high temperatures
   They survive for several days on little water
3. Avoid injuries on other farm animals
   To minimize destruction of farm structures
   To economize on feeding space/transportation
   Dehorned animals are more appealing
   Dehorned animals are less aggressive/docile
4. Faster and can spray more animals within a short period than plunge dips
   Small stocks can be sprayed easily
   Suitable for pregnant and sick animals as they do not get shock
   Less labour required
   Animals cannot swallow the acaricide
   Right concentration on the acaricide is maintained because only enough solution is prepared in each operation
   Avoids wastage of acaricide because used up chemicals are recycled
5. To prevent warping due to uneven expansion and contraction
   To prevent decay or fungal attack
   Prevent cracking of timber
   To improve durability and strength
6. Sick/infertile queen
   Damage to the brood
   Absence of food and water in the surrounding
   Disease and pest out break
   Congestion in the liver/overcrowding – bad smell
   Unfavorable weather/temperature
   Noise and disturbance
8. Is the act of making male bird sterile
9. Food transportation
   Component of body cells/body fluids
   Maintains shape of the cells
   Expulsion of waste products
   Regulation of body temperature
   Used in biochemical reaction
10. Steaming up – is the practice of giving pregnant animals highly nutritive feeds a few weeks towards gestation/giving birth.
    Creep feeding – is the practice of providing young livestock with extra feeds of high nutritive value to supplement mother's milk (piglets)
11. Mouth
    Nostrils
    Eye
    Anus
    Vulva
    Wound/cuts on the skin

12. Carrying capacity – is the correct number of hectares that a forage crop can adequately support a given number of animals
    Overstocking – is keeping more than one animals per unit area pasture than can adequately be supported by the pasture
13. High production due to less energy wastes.
    Quick accumulation of manure
    Maximum use fodder by livestock
    Easy to control parasites and disease
    Requires little hand
    Allow higher stocking rate
14. i) Canula
    ii) Lead stick
    iii) Rubber ring
    iv) Hypodermic needle
15. Swollen and red vulva
    Animals start to prepare nest using litter
    Restlessness
    Full and distended udder
    Slackening of pelvic muscles
16. Inbreeding
    Out breeding

SECTION B

17. (a)
    Fish meal = 50%DCP
    Cereal meal mixture = 12%
    38/78 x 90kg =47kg fish meal
    43 kg cereal meal mixture

b) i) Abomasum E – rectum
   ii) Absorbs water from food stuffs
       Grinds rough and large food particles
       Sieves food particles before passing them into the next chamber in small quantities

18.(a) A – inlet/inlet pipe
       B – spillway
       C – outlet pipe/drainage pipe

b) Spillway – allows removal of excess water from the pond hence preventing overflowing on the dykes

c) Topography
   Soil type
   Security
   Accessibility
   Nearness to water source

19. Protozoan
    Bacterial
    Viral
    Nutritional cases

20. i) liver fluke
    ii) Loss of weight and emaciation
        Pot – bellied condition due to watery swelling on the body
        Animal suffers indigestion
        Damage of the liver and haemorrhage
        Anaemia
        Animal appears dull and depressed
        Swollen and painful abdomen

iii) fresh water snail
iv) draining swampy areas, killing them, burning infected pastures, drenching, avoid grazing in marshy areas

21. Heat method
Crushing and straining
Use of centrifugal extraction

SECTION C

22. (a) Production level
Age
Health
Mothering ability
Temperament
Adaptability
Body conformation
Prolificacy
Physical defects

b) Prophylactic drugs e.g. Coccidiosis
Quarantine – foot and mouth, anthrax etc.
Isolation – calf scours
Culling/mass slaughter – foot and mouth, anthrax
Vaccination – anthrax, black quarter
Control of vectors – nagana, east coast fever
Use of healthy breeding stock – brucellosis
Proper nutrition – milk fever
Proper housing – pneumonia
Proper milking techniques – mastitis
Drenching – ascariasis
Spraying – East Coat Fever
Keeping resistant animals – Zebus – East Coast fever
Hoof trimming – foot rot

23. a) Streptococcus spp or staphylococcus spp
b) Blood/pus in milk
Swollen or infammated udder
Rise in body temperature
Drop in milk production
Pain in the udder or teats
Milk has salty taste
Fine clots in milk
c) Incomplete milking
Low standards of hygiene
Injury in the udder/teats
Genetic factors
Stress
d) Use of correct milking techniques
Use of strip cut to detect infected cows
Practice proper hygiene
Vaccination
Use of dry cow therapy
Treat with antibiotics
Call susceptible

24.(a) Security
Rotational grazing
Paddocking

Mark boundaries
Separate crops from livestock
Control soil erosion
Allows controlled breeding
Aesthetic value
Feed to livestock
Privacy
Controls animals and human movements by avoiding unnecessary paths
Source of fuel
Wind breakers

b) Introduction of new breeds with high quality production
Introduction of new breeds adaptable to various ecological conditions
New methods of parasite and disease control – vaccination
Modern and hygienic breeding techniques e.g. Artificial Insemination
New feeds formulated to produce high quality products
Introduction to organic farming to produce high safe products
Use of modern animal rearing system and structures e.g. zero grazing.
Use of modern methods of storage of animal products e.g. refrigeration.
Use of new methods of identification e.g.ear tagging instead of branding

PRACTICE EXERCISES

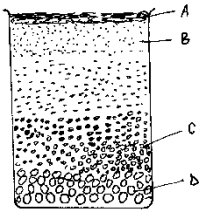
MUMIAS WESTEVALUATION TEST
443/1
PAPER 1
(THEORY)
2 HOURS

SECTION A : (30MARKS)
Answer ALL the Questions in this section.

1. Give FOUR effects of HIV / AIDS on Agricultural production. (2mks)
2. State FOUR reasons for treating water on the farm. (2mks)
3. State TWO importance of sub- soiling in land preparation. (1mk)
4. State TWO disadvantages of shifting cultivation. (1mk)
5. Name TWO practices used in organic farming (1mk)
6. State TWO advantages of tissue culture in crop propagation (1mk)
7. Give FOUR functions of phosphorus to crops. (2mks)
8. State FOUR importance of farm records. (2mks)
9. Give SIX importance of early sowing of annual crops during the planting season (3mks)
10. State the importance of rogueing as used in crop management. (1mk)
11. Give TWO methods used in controlling birds in a field planted with sorghum. (1mk)
12. State TWO cultural methods of controlling Downy mildew in cabbages. (1mk)
13. State TWO disadvantages of tenancy system of land tenure. (1mk)
14. List FOUR negative impacts of soil erosion in Agriculture. (2mks)
15. Give FOUR main factors which contribute to competitive ability of weeds. (2mks)
16. Name TWO types of water pumps (1mk)
17. Explain the terms "close season" as used in crop production. (1mk)
18. Name TWO types of land reforms (1mk)
19. a) Give TWO examples of joint products in livestock production. (1mk)
    b) Name FOUR factors of production in Agriculture (2mks)
20. Give TWO ways through which losses may be incurred during hay – making. (1mk)

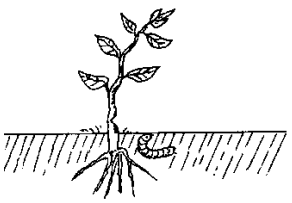
SECTION B: (20 MARKS)
Answer ALL the Questions in this section in the spaces provided.

cylinder. She added some water and sodium carbonate, then covered the cylinder with the hand and shook the cylinder for about two minutes. She left the cylinder on the bench for one hour. The result was as shown below.



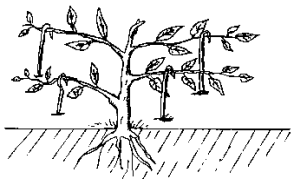
i) What was the aim of this experiment? (1mk)
ii) What was the function of the sodium carbonate in this experiment? (1mk)
iii) Name the layers marked **a, b,** and **c** (3mks)

22. The diagram below shows a tomato seedling attacked by a pest.



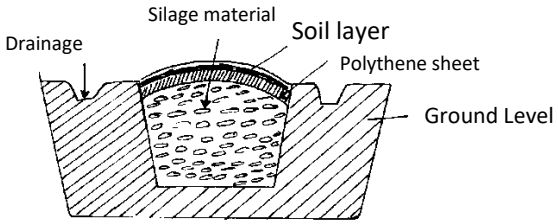
i) Identify the pest. (1mk)
ii) What damage will the pest cause to the crop? (1mk)
iii) State **THREE** methods of controlling the pest. (3mks)

23. The diagram below shows a method of bringing tea into bearing. Study if carefully and use it to answer the questions that follow.



a) Identify the method shown in the diagram. (1mk)
b) Why is it necessary to prune young tea plants as illustrated above? (1mk)
c) Outline the procedure followed when using the pruning methods shown in the diagram on a tea bush. (4mks)

24. Study the diagram of the silo below and answer the questions that follow.



a) Identify the method of ensiling shown in the diagram above. (1mk)
b) State **THREE** precautions taken when ensiling to ensure high quality silage. (3mks)
c) Give **ONE** advantages of this method of forage conservation over other methods (1mk)

SECTION C: (40 marks)
Answer <u>TWO</u> Questions only.

25. a) Describe 'Importance of irrigation'. (5 marks)
b) Outline the physical control methods of pests in crops. (5 marks)
c) Describe the field production of carrots under the following sub-headings.
i) Seed bed preparation (2 marks)
ii) Planting (4 marks**)**
iii) Field management practices **(**4 marks)

26. (a) Discuss the effects of nematodes on potatoes in the field. (6 marks)
b) i) Describe the procedure of harvesting tea. (4 marks)
ii) Explain the precautions that should be observed during the harvesting of tea. (3marks)
c) Describe the factors that influence soil erosion. (7 marks)

27. (a) Outline **seven** effects of strong wind in agriculture. (6 marks)
(b) Briefly describe the soil sampling procedure. (6 marks)
(c) Discuss **four** methods used to prepare planting materials before they are planted. (8 marks)

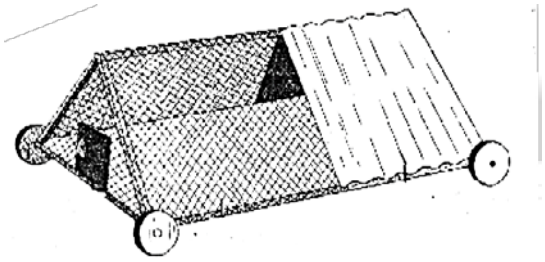
KIRINYAGA WEST
AGRICULTURE
PAPER 2
TIME: 2HRS

SECTION A 30 MKS (Answer all questions in the spaces provided)

1. Outline **four** qualities of good eggs for marketing (2mks)
2. Distinguish between the following terms as used in Agriculture
(a) Monogastric and Polygastric animals (1mk)
(b) Mothering ability and prolificacy (1mk)
3. Name **two** farm machinery that derive power from tractor P.T.O shaft (1mk)
4. Mention **four** post milking practices in cattle production (2mks)
5. Stater **four** predisposing factors to mastitis disease in cattle (2mks)
6. Give the function of each of the following parts of a fish pond.
(a) Inlet
(b) Overflow pipe /spillway
(c)
7. Mention **four** Qualities of a good vaccine (2mks)
8. Outline **four** effects of fleas on livestock (2mks)
9. Name **two** goat breeds kept for meat production
10. Mention **three** causes of bloat in livestock
11. Differentiate between a tool and an equipment (1mk)
12. Give **four** routes through which pathogens can enter the animal's body (2mks)
13. State the function of each of the following parts of a power transmission system of a tractor
(a) Clutch (1mk)
(b) Differential (1mk)
14. e **four** qualities of a good livestock rations (2mks)
15. Outline **two** precautions observed during shearing of sheep (1mk)
16. Mention **three** symptoms of attack by tapeworms in livestock
17. State the activities that take place in each of the following parts of hen's reproductive system during egg formation
(a) Magnum (1mk)
(b) Uterus (1mk)
18. Outline **three** characteristics of clean milk

SECTION B (20Mks) Answer all Questions in this section)

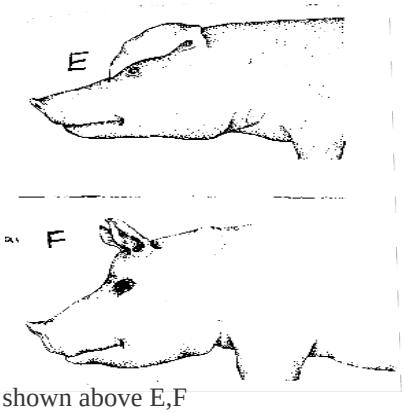
19. The diagrams below represents a structure for rearing poultry . Study it carefully then answer the questions that follow



a) Identify the structure (1mk)
b) State **two** advantages of using the above structure in rearing poultry (2mks)

c) State **two** functions of the unrooted part of the structure (2mks)

The photographs below represent two pig breeds. Study them carefully then answer the questions that follow .

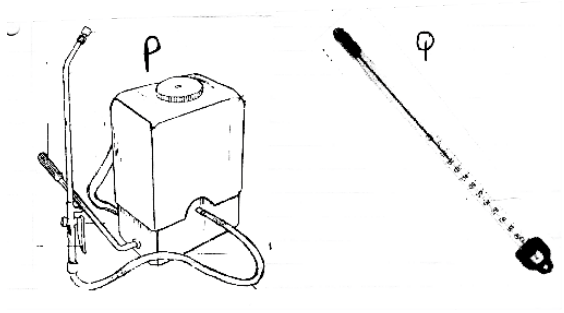


a) Identify each of the pig breed shown above E,F

b) State **two** observable differences between the two pig breeds (2mks)

20. A 300 kg pig rearing ration containing 16% DCP was to be made from rice bran 10% DCP and cotton seed cake (25%DCP) .Using pearson's square method, Calculate the amount of each feed staff needed to prepare the ration (5mks)

21. The illustration below represent some farm tools and equipments . Study them carefully then answer the questions that follow.



(a) (i) Identify the tool /equipment labelled P and Q

(b) State the function of equipment labelled P(1mk)

c) Name the part of following livestock where equipment Q is inserted when using it

i) Poultry (1mk)

ii) Cattle (1mk)

d) State one maintainance practice of tool P (1mk)

SECTION C 40 MARKS

Answer any two questions in this section

23(a) Discuss trypanosomiasis disease under the following subheading

(i) Causal organism 1mk)

(ii) Animal attacked (1mk)

(iii) Mode of transmission (1mk)

(iv) Symptoms (4mks)

(v) Control (3mks)

b) What preparation method should be made by a farmer in brooder to be ready for the arrival of day old chicks (5mks)

c) Describe **five** maintenance practices of a tractor trailer (5mks)

24 a) Describe **seven** advantages of using live fences in the farm (7mks)

b) Describe the procedure for processing honey using heat method (6mks)

c) Describe **seven** characteristics of an ideal dairy cow (7mks)

25 a) Explain the function of any **five** parts of a plunge dip (10mks)
(b) Describe late weaning programme in calf management (5mks)
(c) Outline **five** disadvantages of natural mating as a method of service (5mks)

KIRINYAGA WEST
443/1
PAPER 1
TIME: 2HRS

SECTION A (30marks)

1. Name **three** forms of horticulture practices in Kenya
2. State **four** aspects of rainfall that influence maize farming **(2mks)**
3. State **four** factors that determine spacing in crop production **(2mks)**
4. Name **three** underground water sources
5. Give **four** advantages of row planting method **(2mks)**
6. State the meaning of each of the following terms as used in crop production
   i) Nursery bed **(1 mk)**
   ii) Seedling bed **(1 mk)**
   iii) Seed bed **(1 mk)**
   iv) Pricking out **(1 mk)**
7. State **four** factors that influence the number of secondary cultivation in seedbed preparation
8. a) Give **two** forms in which nitrogen is absorbed from the soil by plants **(1mk)**
   b) State **four** properties of Nitrogenous fertilizers **(2mks)**
9. Name **one** vegetative material used to propagate each of the following crops **(2mks)**

(a) Bananas
(b) Pineapples
c) Irish Potatoes
(d) Pyrethrum

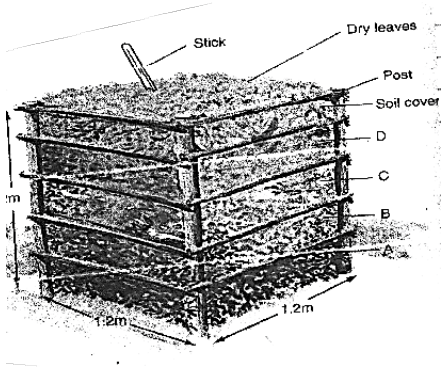
10. State **four** types of variable costs incurred in coffee production **(2 mks)**
11. Name **four** appropriate sites for agroforestry trees **(2mks)**
12. Name **four** types of market structure in agricultural marketing **(2mks)**
13. State **four** human factors that influences the efficiency of Agricultural Production **(2mks)**
14. Name the weed associated with the following harmful effects **(2mks)**

(i) Lower quality of milk by tainting its favour
(ii) Poisonous to man and livestock
(iii) Irritates workers and livestock by causing body itching
(iv) Has parasitic and allelopathic effects

SECTION B

Answer all questions in this section

15. The following is an illustration of a compost heap



a) Name the part labelled A – D **(22mks)**
b). What is the use of each of the parts labeled A, C, and D
c) Give **three** reasons why is compost manure not commonly used in the farms

17. Name **three** sources of underground water

16. The diagram below shows two common measures used to control crop pests .
Study them and answer the questions that follow

(a) Identify the pest control measures marked S and T **(2mks)**
(b Name **one** pest controlled by method marked S **(1mk)**
c) Name **two** pest control measures that belong to the same category as that of measure marked T
17. The illustrations below indicates type of soil erosion that take place on cultivated farm land. Study them and then answer the questions

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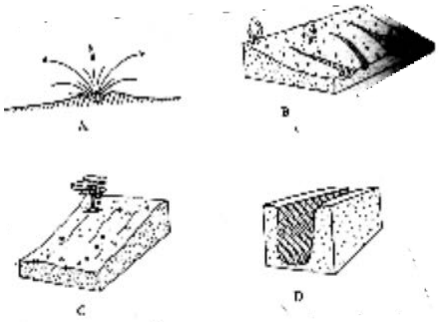
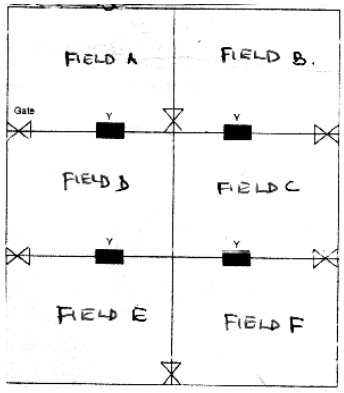


a) Identify the type of erosion represented by each of the illustration A,B, C and D **(4mks)**
b) Give **two** practices that may reduce the impact of the type of erosion represented by A (2mks)
18. The illustrations below shows one of the grazing system commonly used by farmers



(a) Identify the grazing system illustrated above **(1mk)**
(b) State **three** advantages of this system of grazing (3mks)
SECTION C (40 Marks)
Answer two questions from this section in the spaces provided after question 21
19. (a) Explain the various ways of improving labour efficiency on the farm **(5mks)**
b) Describe field production of napier grass under the following sub heading
i) Seedbed preparation **(3mks)**
(ii) Planting **(4mks)**
(iii) Utilization **(3mks)**
c) Describe **five** factors that affect the rooting of sugarcane cuttings **(5mks)**

20. (a) Describe the management practices carried out in production of tomatoes **(10mks)**

b) The following is a farm record kept by Mr. Maina's farm up to 30th June 2022 . Study it carefully and answer the questions that follow.

Particulars	Amount in Kshs.
Cash at hand	100,000
Cash in Bank	330,000
Buildings	250,000
Farm Machinery	80,000
Debtors	80,000
Farm tools & Equipment	60,000
Bank Overdraft	120,000
Creditors	100,000
Loan	250,000
Livestock	200,000
Land	400,000

(i) Prepare a balance sheet for Mr. Maina's farm using the above information **(8mks)**

(ii) State **two** uses of a balance sheet in a farm business **(2mks)**

21 a) Outline **five** effects of land fragmentation **(5mks)**

b) Give **five** reasons why a dairy farmer should keep health records **(5mks)**

c) State **five** practices that aim at maintaining good soil structure **(5mks)**

d) List **five** methods of harvesting water in the farm **(5mks)**

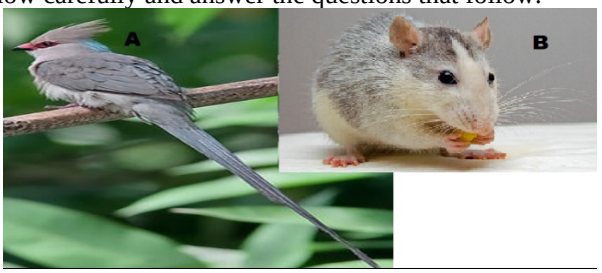
KABARAK
443/1
AGRICULTURE
Paper 1
SECTION A (30MKS)

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

1. Give **four** advantages of large scale farming. (2mks)
2. a) Define nomadic pastoralism (1mk)
   b) State **two** advantages of nomadic pastoralism. (1mk)
3. State **four** factors which determine soil depth. (2mks)
4. Give **four** natural factors that would encourage the gully erosion on a farm. (2mks)
5. State **four** ways in which trees help in soil conservation. (2mks)
6. State **four** disadvantages of communal land tenure system. (2mks)
7. State **four** factors that should be considered when selecting a forage crop species to be established in a given area. (2mks)
8. What do you understand by the following terms. (3mks)
   Seed dressing
   Seed inoculation
   Chitting
9. Give **two** advantages of compound fertilizers (1mk)
10. State **two** effects of varying spacing in maize production. (2mks)
11. State **four** symptoms of viral diseases in crop production. (2mk)
12. List **four** branches of livestock farming. (2mks)
13. Name **four** varieties of dry beans (2mks)
14. Give **four** precautions taken to prevent pest attack in stored produce. (2mks)
15. What is organic farming? (1mk)

SECTION B (20MKS)

16. Study the diagrams below carefully and answer the questions that follow.



   a) Identify the pests labelled **A** and **B** (2mks)
   b) State **two** affects the pest labelled A causes on a maize plant. (2mks)
   c) List **three** effects of pest **B** in stores. (3mks)
   d) State **three** methods of controlling striga weed. (3mks)

17. The diagram below shows a field management practice carried out on a fruit crop. Study it carefully and answer the question that follow.

   a) Identify the practice (1mk)

b) Give **two** reasons for carrying out the above practice. (2mks
c) State **three** reasons for storing beans after harvesting. (3mks)
d) State **three** advantage of processing farm produce. (3mks)
e) Define the term drainage. (1mk)

SECTION C (40MKS)

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

18 a) Describe **eight** farming activities that would encourage soil erosion. (8mks)
b) Describe the harvesting of cotton. (8mks)
c) Describe seedbed preparation for carrot production. (4mks)

19 a) Describe **ten** factors that would determine the nutrient content of hay. (10mks)
b) Describe **ten** advantages of using organic matter for mulching. (10mks)

20 a) Explain **six** morphological features of weeds that influence selectivity of herbicides. (6mks)
b) Give **five** disadvantages of zero grazing system. (5mks)
c) Describe nine factors considered in the selection of planting materials. (9mks)