

K.C.S.E 2006 AGRICULTURE PAPER 1 MARKING SCHEME

SECTION A

1. Olericulture is growing of vegetables while pomoculture is growing of fruits
(Mark as whole) 1mk
2.
 - Movements of animals in large numbers
 - Decomposition of plants and animals remains by soil micro-organism
 - Physical breaking of rocks by roots of higher plants
 - Man's activities e.g. cultivation, mining and road construction
 - Mixing up of soil burrowing animals e.g. earth worms and termitesAny 3 x 1 ½ = (1 ½ mks)
3.
 - Little amount of water is used/economics water use
 - Reduces incidences of certain leaf diseases/ Fungal discs
 - Can be used in sloppy areas because there is no risk of surface run off/no risk of soil erosion
 - Water under low pressure can be used
 - Some fertilizers and pesticides can be applied with irrigation water.
 - Minimizes growth of weeds (any 4 x ½ = (2mks)
4.
 - Adds nutrients.
 - Increases microbial activity in the soil
 - Improves water holding capacity/reduces leaching/ improves capillarity
 - Buffers soil PH
 - Moderates soil PH
 - Moderates soil temperatures
5.
 - Type of cop-soil nutrient status
 - Stage of growth of crop
 - Expected yield
6.
 - Lowers soil acidity raises soil ph(modifies ph
 - Increases the calcium content of organic matter
 - Improves soil structure through flocculation of soil particles/improves drainage.
 - Facilities the availability and absorption of Nitrogen and prosperous
 - Improves legume nodulation and N fixation
 - Encourages multiplication of micro-organization in the soil
7.
 - Free from foreign materials e.g. weeds
 - Gives rise to vigorously growing plants
 - Have high germination percentage
 - Free from pest and diseases attack/healthy
 - True to type not contaminated any 4x ½ = 2mks)
8.
 - Easy to determine plant population in a given area
 - Ensure high quality produce.

- Ensures high production
- Facilities optimum use of nutrient moisture and light
- Permits use of machines when carrying on subsequent farm operations
- Facilities control of pests and e.g. ground

9.

- Pollution of the environment
- Loss of plant nutrients and soil microorganisms
- Siltation of dams and rivers
- Reduction of soil depth
- Destruction aid farm structures (Any 4 x ½ = 2 mks)

10.

- Burning pasture during grazing season, cultural method
- Moving/physical method
- Use of biological agents/ Biological methods

11.

- 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

12.

- Top dress with N fertilizers occasionally/ apply manure
- Control weed
- Practice controlled grazing to avoid denudation
- Cut back dry and unpalatable stems to encourage fresh re-growth/ topping
- Re- seeding when necessary
- Irrigation when necessary
- Control of pest (Any 4 x ½ = 2 mks)

13 (a)

GDP- is the sum total of goods and services produced by a country within a period of one year. (1 x ½ = ½ mk)

16.

- To keep check on income and expenditure / profit and loss
- To know which activities are financially viable/ weakness and strength of the business
- To obtain knowledge of the total value of the farm/ the value of assets and liabilities for farm planning
- To assess credit worthiness
- To provide information for tax purposes
- Organizing agriculture field days for the local community
- Participating in agricultural exchange programs both locally and internationally (Any 4 x ½ = 1 ½ mk)

17.

- Organizing and participating in annual YFC rallies and camps
- Participating and completing in ASK show activities e.g livestock judging
- Planting trees/ carrying out agricultural project in schools

- Organizing agricultural field days for the local community.
- Participating in agriculture exchange programs both locally and internationally.
(Any 4 x ½ = 2 mks)

18.

- Adds- organisms matters
- Recycles soil nutrients
- Helps to control soil erosion
- Improves drainage of swampy areas
- Plays an important part in the hydrological

B- Trapping and killing

Use of scare crows/ scaring

Poisoning/ rodenticide usage 1x1 = (1 mk)

21.

- (a) The law state that “if successive units of one input are added to fixed units of other inputs, a point is eventually reached where additional output per additional unit of input will decline” (mark as a whole)
- (i) At the end of the third unit of fertilizers application
- (ii) This is the least profitable unit of fertilizer application beyond which there would be a loss
- (iii) Marginal returns (MR) at the point of optimum production
MR = Kshs 1200 x 2 = 2400/=

22. (a)

- Read the label/ the manufactures instruction
 - Measure the requirement amount of fungicide
 - Place it into a container and mix thoroughly
 - Powder has dissolved completed/ has formed slurry
 - Pour the mixture into the knapsack sprayer though the sieve
 - Spray the mixture onto the crop
- (b) Blight (late or early) powdery mixture (1 mk)
- (c)
- Spray following the direction of the wind
 - Wear protective clothing
 - Avoiding eating or smoking while handling fungicides
 - Avoid spillage of the fungicide/ avoid containing the environment
 - Do not suck/ blow a blocked nozzle Any 4 x Vi = (2 mks)

23.

- (a) blackjack/ Bidens pilosa
- (b)
- To avoid competition for nutrients, moisture arid light
 - Black jack seeds may contaminate some crops/ farm practice
 - Blackjack may be an alternate host to some pest e.g aphids which may attack crops like beans
 - Black jack seed prick and irritate workers Any 2 x 1 = 2 mks)
- (c) - MCPA
- 2, 4-D

- (d) At what stage of growth of maize should the weed be controlled using a pest?
- 10 to 15 cm hi
- 2 to 4 weeks after emergence 1 x 1 = 1 mk

SECTION C

24.

- Clear the place, if bushy
- Dig/prepare the site to a desirable tilt/ Fine with
- Remove roots and stone from the site
- Prepare nursery beds 1- 1.54 wide by any convenient length
- Prepare raised or sunken nursery bed depending on moisture content available
- Level the Nursery bed (Any 4 x 1 = mks)

(b)

- Make shallow furrow drills/ about 10cm apart
- Apply phosphates fertilizers in the furrows/ Drill and mix with the soil
- Sow seeds by drilling
- Cover the seed lightly with soil
- Apply some mulch after sowing seeds
- Water the nursery thoroughly (any 3 x 1 = 3 mks)

(c)

- Remove the mulch as soon as seedling emerge
- Water the nursery at least twice a day, preferably morning and late evenings
- Remove weeds as they come up
- Thin young seedlings if over crowded/ prick seedlings
- Control diseases
- Harden off the seedling/ remove shade gradually and reduce frequency of watering (any 5 x 1 = 5 mks)

(d)

- Water nursery thoroughly before transplanting
- Dig the planting holes at appropriate depth
- Select healthy seedlings
- Uproot seedlings carefully with as much as possible to avoid root damage/ use a garden trowel
- Transport seedling carefully to the end field using appropriate means
- Transport on a cloudy day or late in the afternoon
- Place insecticide in the hole to control soil borne pests
- Place the seedling in the planting holes at the same depth they were in the nursery bed
- Fill the holes with soil and firm around the seedlings
- Apply mulch or erect a shade
- Water the seedling thoroughly (Any 5 x 1 = 5 mks)

25. (a)

- Availability of adequate funds or capital/ inputs
- Training of personnel or availability of advisory services on managerial skills
- Loyalty on the part of all farmers, co-operators and officials to support their organization

- Proper and accurate record keeping and accountability for all operations
- Efficiency with which produce from farm are marketed
- Honest on the part of personnel with regard to the handling of co-operative finances
- Timely payment of farmers dues

(b)

- Diversification/ growing a variety of crop or having various enterprises so that if one fails has something to rely on.
- Insurance against losses/ taking insurance policy for farming activities so that in case of failure the enterprises are covered.
- Inventory marketing/ strategic farming keeping farm product and selling at when prices are favorable
- Flexible enterprises engaging in enterprises that can be stopped or started early as condition change.
- Rationing of inputs using just sufficient inputs such that in case of losses the cost are not too high
- Using more certain husbandry practices using practices that the farmer is sure of and has used in the pas.
- Hedging/ contract marketing making arrangements with marketing agencies in advance so that changes in price after the arrangement do not change the price of the farmer's produce.
- Selecting more certain enterprises selection of enterprises that the done well in the area/ tried though research (any 7 x 1 = 7mks)

C.

- Determination of the farmer's objectives and preference in order to eliminate those production possibilities that are unsuccessful
- Determination of available resources to the farmer in order to establish his/her abilities and limitations.
- Determination of possible productive enterprises
- Determination of tentative budget/ translation of physical plan into a financial
- Determination of yield f various enterprises
- Development of financial flow in order to establish the capital requirements
- Examination of the plan to ensure that is is consistence, workable and desirable
- Determination of government policies and regulation to make the plan realistic. (Any 8 x 1 = 8 mks)

26. (a)

- Ponds/ water pumps
- Dams/ weirs
- Roof catchments
- Rock catchments
- Retention ditches/ level terraces

(b)

- Continuous cropping without giving the land a rest
- Burning
- Ploughing along the slopes/ farming on step land
- Deforestation

- Ploughing along river banks
- Cultivating when the soil is too dry or wet
- Overgrazing/ overstocking
- Flooding/ application of a large amount of water at high rate
- Over cultivating the land to fine tilth/ pulverizing the soil

(c)

- Mulching by reducing the speed of run- off and reducing the impact of raindrops
- Contour farming by reducing the speed run off
- Terracing effective length of the slope and consequently slowing down speed of running off
- Planting trees/ holding soil particles together hence reducing effects of wind erosion and reducing the impact of rain drops
- Establishing and maintaining vegetated water; by reducing the impact of livestock on the soil erosion
- Establishing trash lines/ sones lines by reducing speed of run- off an effects of wind erosion

K.C.S.E 2006 AGRICULTURE PAPER 2 MARKING SCHEME
SECTION A

1. Hampshiredown (1 mark)
2. Cross cut saw/ Tenon saw/ Back saw/ spokes have/ circular plane $2 \times \frac{1}{2} = 1 \text{ mk}$
3. Removal/ harvesting of marketable size fish from the pond (1 mk)
4. Prevents metal engine parts from rusting
 - Promotes free movement of engine parts by reducing friction
 - Traps foreign materials e.g. soot, dirt and dust
 - Lowers engine temperature by conducting away excess heat
 - Helps in sealing compression between the piston and cylinder $4 \times \frac{1}{2} = 2 \text{ mks}$
5.
 - Keeps radiator fins free of rubbish and dirt. Water pump lubricated regulated/ weekly
 - Ensure that the fan belt is tightly fitted/ proper tension/ lock bolts and nuts should be tightened
 - All pipes should be fitted tightly to avoid leakage
 - To top up the level of water in the radiator before using the tractor $4 \times \frac{1}{2} = 2 \text{ mks}$
6.
 - Disc ploughs work better in dry/ sticky and hard soils than mould board plough
 - There is less hindrance to operations chances of breakages because the discs roll/ ride over obstacles
 - The maintenance costs of disc plough are lower than the moldboard\
 - Disc plough require less tractor- power to pull than moldboard
7.
 - An outlet to drain off excess water
 - An inlet for fresh water supply
 - A spill way channel to take away excess water/ overflow water
 - A screen to prevent escaping of fish/ entry of unwanted objects/ fish
 - A fence to keep away predators/security
 - Dikes walls embankment/ leaves ($4 \times \frac{1}{2} = 2 \text{ mks}$)
8.
 - Through the mough/ natural openings
 - Through umbilical cord
 - Through respiratory track
 - Through injury/ wounds on the body
 - Though bites by disease vectors ($4 \times \frac{1}{2} = 2 \text{ mks}$)
9.
 - Spraying insecticides the breeding places
 - Clearing the vegetation
 - Use of appropriate insecticides to spray cattle
 - Sterilization of the male tsetse flies ($4 \times \frac{1}{2} = 2 \text{ mks}$)
10.
 - Overgrown hooves
 - Wet and muddy conditions
 - Physical foot injuries ($2 \times \frac{1}{2} = 1 \text{ mk}$)

- 11.
- High milk yields
 - Good health
 - Fast growth/ early maturity
 - High growth/ maturity
 - Good mothering ability
 - Good body conformation (4 x ½ = 2 mks)
- 12.
- They can browse and survive on poor vegetation
 - They have hooves with tarry pads which enable them to traverse large area sandy ground/ flat hooves
 - They can tolerate high temperature/ have thick skins
 - They can travel long distances for several days with very little water
 - Store fats in humps/fats can be metabolized to metabolic
 - Long eye lashes to prevent entry of sand/ have nose flaps
- 13.
- Softening moistening of the food
 - Storage of food (2 x ½ = 1 mks)
- 14.
- Using of caustic potash stick
 - Use of disbudding iron/ dehorning
 - Use of dehorning saw or wire
 - Use of rubber ring and elastrator
 - Use of dehorning collusion (4 x ½ = 2 mks)
- 15.
- Overcrowding
 - Pest infestation/ pest diseases
 - Noise/ strangers
 - Lack of food and water
 - Sudden change in routine/ management
 - Unbalanced diet
 - Fluctuation in temperature
 - Introducing new bird in the flock
- 16.
- Feeding the queen / the broods
 - Protecting the hive from intruders
 - Collecting nectar, pollen, gums and water/ Foraging
 - Cleaning the hive
 - Building combs and sealing cracks
 - Making honey bee wax
 - Scouting (4 x ½ mk = 2 mks)
- 17.
- Should be rain- proof/ leak proof
 - Should be well ventilated
 - Should be easy to clean
 - Should be well lit

- Should have adequate space
- Drought free
- Good drainage (4 x ½ = 2 mks)

SECTION B

18. (i) A- Furrow opener
 B- Fertilizer hopper
 C- seed hopper
 D- Press wheel (4 x ½ = 2 mks)

Clean hopyjers/ tuirow openers after use

- Lubricate/ grease moving parts
 - Replace worn out lost bolts and nuts
- (ii)
- Check tension of chains/ drive sprockets before use
 - Tighten loose bolls and nuts (any 2 x 1 = 2mks)

- (b) (i) E - adjustable spanner
 F - Ring spanner 2 x ½ = 2mks)

- (iii) Tool E can be used for tightening or loosening more than two sizes of nuts and belts (Rejects one is adjustable (1 mk)

- 19 (a)
 (i) Slatted floor 1 x 1 = 1 mk

(ii) (H 40 – 60 cm high

(b) (i)

- To allow urine and dung to pass through
- To keep the floor dry (Any 1x 1 = 1mk)

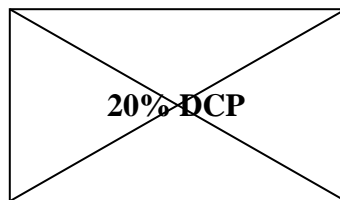
(ii)

- Prevailing direction of the wind
- Safety/ security
- Proximity to the dairy shed/ accessibility of the dairy shed
- Drainage
- Topography (any 3 x 1 = 3 mks)

20. (a) Term used to express that amount of the crude protein absorbed by an animal's body from a feed 1 x ½ = 1mk)

(b) Pearson's square method

Maize 10% DCP 35-



20 = 15 parts of maize

Sunflower 35% DCP

Sunflower

Amount of maize $15/25 \times 200 = 120\text{kg}$

Amount of sunflower $10/25 \times 200 = 80\text{ kg}$

Mark as shown in the diagram

4 x 1 = 4 mks

- 21 (a) G - Muzzle
H - Poll
I - Shoulder
J - Heart girth 4 x ½ = 2 marks)

- (b) Ear lobes/ deep in the ear
Anus
Vulva
Under tail 4 x ½ = 2mks)

22. (a)
- Spray the entire backline from my shoulder to the tail head
 - Spray the sides in a zigzag motion to trap me retain the wash from the backline
 - Spray the belly with me nozzle facing upward
 - Spray the scrotum/ udder and the hind flanks carefully
 - Spray both hind legs up to and including the heels
 - Spray under the tail head and the area around the anus and vulva
 - Hold the tail switch on to the rump and spray it thoroughly to ensure complete wetting
 - Spray the neck and the foreleg; from the flanks to the heels
 - Spray the head and face making sure that bases of the horns are thoroughly wetted,
 - Spray the inside of the ears 10 x 1 = 10 mks)
 - (b) (i) Causal organisms – Virus/ virus types O, A, C/ south African types SAT1, SAT2, SAT3, / Asian type 1 (1 x 1 = 1mk)

- (ii)
- Cattle
 - Pigs
 - Goats
 - Sheep
 - Profuse salivation (Any 2 x 1=2 mks)
 - Blisters which are painful around the mouth and hooves of the feet leading to lameness
 - Drop in milk production in lactating cows
 - Sharp rise in temperature/ high fever
 - Emaciation
 - Complete loss of appetite
 - Diarrhoea (any 4 x 4 = 4 mks)

- (iv) Quarantine
- (a) Vaccination every 6 months
 - (b) Slaughter and destruction of carcass
 - (c) Regulations of livestock movement by issue of movement permits
 - (d) Burn/ bury dead animals

23 (a)

- Select good animals on the basis of high yielding cows
 - Select animal with good health
 - Select animals having high fertility
 - Select animal having good dairy conformation
 - Cull poor producers
 - Use superior bulls/ semen from superior bulls to service the cows
 - Mate heifers when fully mature considering weight/ age
 - Breed cows 60- 90 days after calving to maintain after calving interval of one year
 - Keep animals health by routine vaccination
 - Control internal parasites by routine drenching using appropriate drugs
 - Treat sick animals
 - Avoid physical injuries to the animals/ predisposing disease factors
 - Improve sanitation/ cleanliness in the farm
 - Feed the cattle on a balanced diet
 - Give adequate feeds
 - Give clean and uncontaminated feed
 - Provide plenty of clean water
 - Provide minerals/ vitamins
 - Provide housing/ avoid overcrowding/ provide shelter that is leak proof
 - Use proper milking techniques
 - Milk at regular intervals
- (Any 15 x 1 = 15 mks)

(b)

- Control stocking rage
 - Control of water pollution
 - Supply adequate feed regularly
 - Provide appropriate feed
 - Aerate the eater by ensuring constant inflow and outflow of water
 - Control predators
 - Harvest fish at the correct maturity stage
 - Maintain appropriate water level in the fish pond always
 - Add manure or fertilizer in pond to encourage growth of planktons
- (Any 5x 1 = 5 mks)

24. (a)

- Farm operations can be achieved on time
 - Large area can be covered within a short time
 - Reduce drudgery/ makes work easy and enjoyable
 - Better job is done mechanically than human labor/ increased efficiency
 - High yields are obtained because farm operations are carried out on tme
 - Pest and disease outbreak can be controlled relatively in a shorter time
 - Tends to encourage farmers to consolidate their land
 - Farmers benefit from economies of scale
 - Use less labor
- (Any 6 x 1 = 6 mks)

(b) TWO STROKE CYCLE ENGINE

- Cheap to buy and easy to maintain
- Produce less power/ do less heavy
- Mainly air cooled
- Inefficient in fuel and oil utilization
- Easy to transport to different areas of the farm land e.g hilly areas\
- Require two complete upward and downwards movements of to be position, and one revolution of crankshaft
- There is no provision of oil in the sump, during induction, to lubricate the crankshaft
- Simple in construction with no valves
- Has 2 openings exhaust

(c) FOUR STROKE CYCLE ENGINE

- Expensive to buy and maintain
- Produce more power/ do heavy work
- Efficient in fuel and oil utilization
- Mainly water cooled
- Difficult to transport easily due to weight
- Require 4 complete upwards and downwards
- 2 revolutions of 1 he crankshaft
- Engine have oil in the sump to lubricate the crankshaft bearings
- Complex in constructions with two valves (inlet and outlet)
- Has no parts and inductors ports any 6x 1 = 6 mks)

- Using a dip – stick to check the level of oil in the sump
- Check the fuel tank to ensure there is adequate fuel for the day’s job
- Check the level of the electrolyte in the battery and adjust accordingly.
- Grease/oil moving parts
- Check-fan belt. Tension’ and condition and adjust accordingly
- Check level of water in radiator and top up if necessary
- Check air cleaner to ensues that there is no dirt/check level of oil
- Check tyre pressure before work and adjust accordingly
- Tighten bolts, nuts and pins
- Open and remove the dirt from sediments bowels

Any 8x1=8 marks

KCSE AGRICULTURE MARKING SCHEMES 2007 PAPER 1

1.

- Very steep land
- Water logging / marshy area.
- Forested / Bushy area.
- Rocky / Aridity/Tsetse fly infested areas.

2.

- Wind / Moving water
- Temperature changes
- Moving ice/ Glacier

3.

- Using a sieve / sieve analysis.
- Sedimentation method

4.

- Can be used as a security for credit.
- Encourage long term investments
- Reduces land disputes
- Motivates the farmer to conserve soil water.

5.

- Improves soil structure
- Controls soil borne pests and diseases.
- Ensure maximum utilization of farm labour.
- Aids in weed control
- Improves soil erosion.
- Security incase of failure of one crop.
- Add nitrogen through N – fixation by Rhizobium bacterial when legumes are included.

6.

- Crop attacked / mode of feeding .
- Whether field or storage pest.
- Crop parts attacked.
- Stage of crop growth attacked.
- Scientific classification e.g. insects, mite, rodents.

7.

- Important in calcium utilization.
- Necessary in sugar translocation
- Needed in water absorption.
- Aids in translocation of sugar nitrogen and phosphorous.
- Aids in fruit development.

8.

- Development of infrastructure.
- Housing status of the citizens.
- Increase in recreation facilities.
- Ratio of teachers to students.

- Improvement in the level of technology/ more industrialization.

9

- Price of substitutes.
- Price expectations in future.
- Quality of the commodity
- Tastes and preference of the commodity.

10

- Medicago sativa/Lucerne
- Leucaena leucocephala/calliondra.
- Artemisia annual/Artemisia.
- Calliandra calothyrsus/calliandra
- Desmodium species
- Kenya white clove/ Infolium sepioloides

11

- Quantity of forage available for ensiling.
- Number of animal to cater for.
- Length of the period of forage scarcity.
- Bulkiness of the material.

12

- To avoid poisoning of livestock.
- Minimize diseases spread.
- To ensure the forage is of high palatability.
- Minimize competition for nutrients, space light.
- To increase the life span of the pasture.

13

- Has appropriate depth
- The right PH/ Good soil structure.
- Good water logging capacity.
- Well aerated/good drainage.
- Free from soil borne pests and diseases.
- Rich in nutrients in the right proportions.

14

- Should be of high purity.
- Should be free from pest and disease attack.
- Should be appropriate size
- Should be mature.
- Should be free from any physical damage.
- Should be of high percentage of germination.
- Should be suitable to the ecology of the area.

15 (a)

- Over –cultivation, overstocking/overgrazing.
- Deforestation/planting annual crops on steep slopes.
- Burning of the vegetation.
- Ploughing up and down the slope.

(b) V- shaped gullies U-shaped gullies.

16. (a)

- There is proper supervision of the farm.
- Reduces costs on traveling
- Easy to get extension services.
- Allows good farm planning.
- It enhances proper pests, diseases and weed control.
- Encourages long term investments.

(b)

- Landlord can earn income from the land.
- People who have no land are able to access to farming.
- Idle land is put into agricultural use.
- Tenant is able to increase/decrease the size of land leased depending on profitability.

17. (a) Shs. 800

(b) (i) 120 bags ii) 900

18. a) A₁- root stock A₂- Grafting
 b) A₃ Grafting b- Trench layering

19. a) C₁ – Maize stalk borer, maize weevil, Aphids
 C₂ – Maize streak, white leaf blight.

20. a) p₂ o₅ = 20%

b) 1 ha = 10,000m² requires 300kg of fertilizer.
 5m x 10m₂= 50m² requires x of the fertilizer
 10,000 x = 300 x 50

$$X = \frac{300 \times 50}{10,000} = \frac{3}{2}$$

21. a) Single stem pruning.

b) The main stem is capped at 38cm above the ground to encourage more suckers to grow. Select two strong and healthy suckers and remove the others. The selected suckers should form a U-shaped to avoid splitting.

22. (a)

- Clear the land
- Divide the land into plots of 0.4 ha
- Construct /repair bunds /dykes.
- Construct/ repair inlet and outlet channels
- Flood the field to a height of 7.5 – 10cm above the soil surface.
- Carry out primary tillage
- Puddle the soil to a fine mud.
- Uprooted weeds should be heaped on the bunds.
- Level the plots by dragging a wooden board/ jembe.

(ii)

- Flood the plots to a depth of 7.5 – 10 cm.
- Leave the field flooded for 4 days.

- During transplanting, drain the field to a depth of 5cm,
- Introduce water gradually as the crop establishes.
- Maintain the water level at 1/3 the height of the crop
- Change water every 2-3 weeks or when it is cold.
- Water should allow to flow slowly through the field
- Drain the field 2-3 weeks before harvesting.

(b)

- Irrigation during the dry season.
- Timely pest control.
- Timely weed control
- Pruning, Coppicing/pollarding/capping.
- Thinning/selective harvesting.
- Protection against damage by animals.
- Grafting/budding.
- Fertilizer/manure application
- Construction of micro-catchments
- Structures around the trees
- Provision of shade/mulch to reduce evaporation.

23. (a)

- Competition from cheap/synthetic / products, causing loss.
- Change in supply of the produce; leading to price fluctuation
- Change in market demand; leading to price fluctuation.
- Lack of market information; leading to exploitation by middle .
- Inadequate capital; hence poor financing of various marketing functions.
- Poor quality of produce; leads to price fluctuation.
- Seasonally of produce; leads to price fluctuation.
- Bulkiess of most agricultural produce; making it expensive and difficult to transport.
- High perishability; this leads to low quality of produce
- Poor storage structure; leading to heavy losses of the produce.
- Lack of knowledge in marketing leading to heavy losses.
- Government interference through its agents leading to price fluctuation
- Acts as a record for future reference.
- Helps in deciding the viability of the enterprise
- Assist in securing credit.
- Helps to predict the profitability of the enterprise.
- Aids in detecting problems easily hence correction is done in good time.
- Aids in making management decisions especially when comparing between enterprises.
- Helps in making changes in the farm.
- Ensures periodic analysis of the farm business.
- Encourage the farmer to be efficient so as to meet the target.

24 (a)

- Enables one to grow crops during the dry seasons.
- It's a method of land reclamation/ allows crop production in arid and semi-arid areas.

- Makes it possible to grow crops in special structures e.g. green house.
- Enables one to grow crops that require high amount of water e.g. paddy rice.
- It supplements rainfall in case it is inadequate in crop production.

(b)

- Topography,
- Soil type
- Type of crop to be irrigated.
- Amount of water available.
- Technology available.
- Distance of the source of water to the field.
- Capital available, skills available
- Climate factors of the area.

K.C.S.E 2007 PAPER 2 MARKING SCHEMES

1.
 - To keep the house warm.
 - To absorb moisture from poultry droppings.
 - Keeps birds busy scratching, thus reducing cannibalism.
2.
 - Marks's disease, avian spirochaetosis.
 - Fowl typhoid, Gumboro/ infectious bursa disease.
 - New castle, fowl pox, infectious bronchitis.
 - Chronic respiratory disease.
 - Infectious coryza of chicken.
3.
 - If the sow is barren.
 - Poor nutrition if the calf cold milk.
 - Poor timing services
4.
 - Overfeeding/ giving the calf cold milk.
 - Lack of colostrums.
 - Irregular feeding of calf.
 - Feeding milk at wrong temperature.
 - Feeding milk in dirty containers/ feeding contaminated milk.
5.
 - Level of milk production
 - Quality of roughages.
 - Availability of the concentrates.
 - Economic factors/cost of concentrates.
 - Physiological status.
6.
 - Washing the udder with warm water.
 - Allow the calf to suck for a while
 - Feeding the cow during milking.
 - Regular milking time
 - Sound associated with milking.
 - Massaging the udder when washing it.
7.
 - To make the animal docile
 - Reduce, incidence of animals injuring each other/attendant.
 - Reduce incidence of animals damaging farm structures.
 - Increase feeding, watering transportation space.
 - Add aesthetic value to the animal.
8.
 - Halters, Nose bull ring and leading stick. Rope.
- 9
 - Carcass lacks rigor mortis.
 - Excess bloating
 - Water tar-like blood oozes from body openings

- Oozing blood clot.
 - Rapid purification.
- 10
- Introduce toxins that are harmful to the animal.
 - Cause anaemia/transmit diseases.
 - Cause wounds that allows secondary infection.
 - Cause irritation which leads to scratching/destroy wool.
- 11.
- Source of water/Type of soil
 - Topography.
 - Closeness to homestead/accessibility.
 - Closeness to the market/consumers.
 - Far away natural sources of fish.
- 12.
- Adjust the depth of ploughing
 - Adjust furrow width of ploughing
 - Front furrow depth.
 - Lowering /raising ploughing pitch.
- 13.
- (a)
- Saanen, anglo-Nubian, Toggenburg. British alpines, Jamnapari.
- 14
- proper feeding. prophylaxis, quarantine.
 - Proper housing, control of parasite.
 - Practice farm hygiene.
 - Routine vaccination.
 - Use of healthy breeding stock.
 - Timely treatment of the sick livestock.
 - Control of vectors, dipping, spraying.
- 15
- Wind power. Water power, animal power solar energy. Human power, Biogas Geothermal.
- 16.
- Painting metallic parts
 - Regular washing.
 - Repair broken parts/cracks.
 - Replace lost parts.
- 17.
- Fuel systems, 1
 - Lubrication system.
 - Electrical system.
 - Ignition system,
 - Cooling system,
 - Hydraulic system
 - Power transmission system

18

- Permanent calf pen.
- Movable calf pen.
- Concrete floor calf pen.
- Slatted floor calf pen

19.

- Calcium deficiency in the birds body.
- Blight light in the laying nests
- Birds laying on the floor.
- Presence of broken, soft shelled eggs.
- Prolonged stay of eggs in the laying boxes.
- Idleness of birds.
- Inadequate feeding.

20

(a) A- cross-cut saw B- rip saw

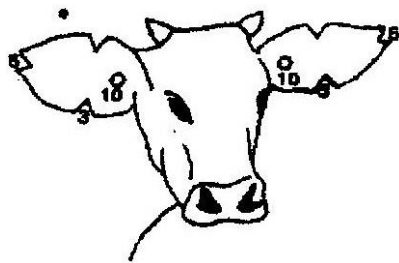
(b) A- cutting across the grain B- cutting along the grains

(c)

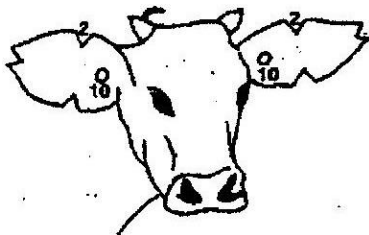
- Wipe blade with an oily rug.
- Regular sharpening of the teeth.
- Ensure the handle is firm,
- Teeth setting.
- Straighten the blade if bent.
- Proper storage of the foods.

21(a) (i) ear notching (ii) Number 40 (forty)

(ii) AC. $10+5+5+2+2$ ($17+17$)



Animal No 36



Animal no 34

(b) Between 18-1-2007 and 20-1-2007

22. (a) Barbet wire gate
(b) C – gate post/King post/strainer
D – Wire loop
E – Dropper.
- (c) (i)
 - Support the gate post
 - To ensure the barbet remains taut.(ii)
 - Prevent movement of farm animals outside
 - Keep away livestock from outside.
 - Used as entrance into/exit from the farm.
23. (a) Animal/ ox-drawn plough.
(b) G – Mould board.
J – Share
H – Land slide
K – Land wheel
- (c)
 - Plough/ridging
 - Harvesting root crops e.g. groundnuts.
 - Weeding row planted crop.
 - Opening furrows for planting.
24. (a) **Advantages of battery system.**
 - Higher egg produce due to less energy wastage.
 - Easy to keep individual production records.
 - Control cannibalism and egg eating.
 - No contamination of water and feed.
 - Birds are not exposed to predators, parasites and diseases.
 - Facilitates culling and handling.
 - Easy to collect eggs
 - Egg losses are reduced.
 - Many birds are kept in a given/high stocking rate.
 - Eliminates broodiness.
 - Birds still have tender meat at culling due to confinement.
 - Facilitates mechanization.
 - Keeps eggs clean.
- (b) **Factors considered in selecting livestock k for breeding.**
 - Body confirmation.
 - Fertility/breeding ability.
 - Adaptability of the breed to the arts/hardiness.
 - Mothering ability in case of females.
 - Production potential/yielding capacity.
 - Temperament/behaving e.g. cannibalism egg eating.

- Deformities/abnormalities e.g. one eye lameness.
 - Offspring performance
 - Age of animal.
 - Growth rate, quality produce
 - Disease resistance, prolificacy.
 - Lifespan/reproductive life.
25. (a) **Operation of a four stroke engine.**
- (i) **Induction stroke/suction.**
- The piston moves down the cylinder, causing the inlet valve to open and draw in fresh supply of petrol vapour and air into the cylinder, exhaust valve closed
- (ii) **Compression stroke.**
- The inlet valve closes and the piston moves up the cylinder. This compresses the fresh fuel mixture into the combustion chamber, exhaust valve to close.
- (iii) **The power stroke.**
- Fully compresses the fresh fuel mixture and as a result a spark is produced at the spark plug. This causes the fuel mixture to ignite and expand resulting in pressure that forces the piston down the cylinder. Inlet valve closed exhaust valve closed.
- (b) **Functions of gearbox.**
- Helps the driver to select any forward or reverse gear.
 - Adjust speed of the driver from the engine crankshaft to the driver shaft.
 - Helps to alter the speed ratio.
 - Enables the power from the engines to be more easily applied to the work done by the tractor.
 - Enables the driver to stop the tractor movement without stopping the engine or without foot oppressing on the clutch all the time.
26. (a) **Features of an ideal calf pen.**
- **Concrete/raised stated floor** – Easy to maintain cleanliness.
 - **Dry litter/bedding** – Maintain warmth.
 - **Proper lighting** – Should have good supply of natural light/sunlight.
 - **Proper drainage** – facilitate free flow of urine and water to avoid dampness.
 - **Draught free** – The structure should stop strong winds from blowing into the calf pen.
 - **Proper ventilation** – Structure should allow for fresh air circulation.
 - **Security** – Should be strong enough to keep away intruders/wild animals.
- (b) **Pneumonia in calves.**
- (i) **Predisposing factors**
- Overcrowding of calves in the pen.
 - Dampness/chilliness in the pen.

- Poor ventilation.
- Age/younger calves are more prone to pneumonia than older calves.
- Effects of diarrhea and other illness.
- (ii) Symptoms.
 - Rough hair coats/ruffled hair.
 - Loss of appetite.
 - Abnormal lungs sounds e.g. whizzing.
 - Emaciation, frequent coughing.
 - Nasal discharge.
 - Fluctuating body temperature.
 - Dull and reluctant to move.
- (iii) Control measures.
 - Treating the sick calve with antibiotics.
 - Providing warmth in pens.
 - Maintaining good sanitation in pens.
 - Isolating sick calves to avoid spread of the disease.

AGRICULTURE PAPER 1 MARKING SCHEME

SECTION A (30 MKS) 2009

1. Methods of treating water

- i. Chemical treatment/chlorination/soda ash/sodium hypchlorate
- ii. Filtration
- iii. Boiling
- iv. Aeration
- v. Sedimentation/decantation/use of Alum(Aluminium Sulphate)
- vi. Storage for 36 hrs

2. Examples of water pipes

a) Meta pipes:

- i) Galvanized iron popes/steel pipes
- ii) Aluminum pipes
- iii) Copper pipes (2x ½)

(1mk)

b) Hose pipes: hose

- i) Rubber pipes
- ii) Plastic Hose pipes/ Pvc pipes (Poly viney chloride pipes) (1 mk)

3. Disadvantages of Communal land tenure:

- i. Encourage soil erosion
- ii. Results in overgrazing/overstocking
- iii. Difficult to control breeding/breeding diseases
- iv. No individual security on land ownership

- v. Difficult to acquire loans for agricultural development projects
- vi. Difficult to carryout sound farm
- vii. Encourages spread of diseases and parasites
- viii. Encourages land disputes among community members. (2 mks)

4. **Site for agro-forestry trees;**

- i. Farm boundaries
- ii. Homestead
- iii. Terraces
- iv. River banks/water catchment areas
- v. Steep slopes/slopes
- vi. Within pasture land between crop plots

5. **Financial documents:**

- i. Receipt
- ii. Invoice
- iii. Statements
- iv. Purchase order
- v. Delivery 4x 12=(2mks)

6. **Check dams and erosion control**

- i) slow down the speed of run-ff to reduce erosive power of water
- ii) Reduce the volume of run-offs
- iii) trap soil sediments (2x ½) (1mk)

7. **Methods of budding**

- i) T-budding

- ii) Top budding
- iii) Patch budding 2x ½ (1mk)

8. **Reasons for sitting a nursery under shelter.**

- i) Reduce damage to seedlings by strong wind
- ii) Reduce evaporation/transpiration rate due to strong sun and wind. (1mk)

9. **Burning of vegetation.**

- i. Destroys organic matter humus
- ii. Destroys soil structure
- iii. Kills useful soil micro-organisms
- iv. Exposes soil to agent of erosion
- v. Causes nutrient imbalance/loss of volatile nutrients/accumulation of soils

(2 mks)

10. **Forms of Nitrogen**

- i) Nitrate form/Nitrate ions/ NO_3^-
- ii) Ammonium form/ammonium ions/ NH_4^+ (1mk)

11. **Wilting of sorghum**

- i) To avoid prussic acid/hydrocyanic acid poisoning (1mk)

12. **Roles of soil micro-organisms**

- i) Decomposition of organic matter to release plant nutrients
- ii) Some fix nitrogen/ sulphur into soil
- iii) Some produces toxic substances that help control soil borne disease.

(1mk)

13. **Hybrid and composite**

Hybrid- Is bred by crossing to bred varieties/inbred lines under controlled pollination while:

Composite:- Is bred by crossing a number of varieties under uncontrolled pollination (mark as a whole) (1mk)

14. **Optimum temperature**

- i) Enhances seed germination/emergence
- ii) Promotes soil microbial activities
- iii) enhances vigorous growth and development
- iv) Enhances high yields (1 ½ mks)

15. **Harmful effects of strong wind**

- i) Results in soil erosion/loss of plant nutrients
 - ii) Results in lodging of crops/distortion/ shading of leaves, flowers, fruits
/brae of branches
 - iii) High evapo transpiration rates causing wilting of plants.
 - iv) Spreading of diseases/weed seeds/pests
- (1 mk)

16. **How cover crops conserve soil moisture**

- i) Reduces surface run-offs/increase water infiltration into the soil
- ii) Reduce evaporation rates (1 mk)

17. **Reasons for**

a) **Pricking out**

- i) Reduces competition for light, space, nutrients

ii) To enable the seedlings to (1x1) grow strong (1mk)

b) **Root trimming**

i) Encourages development of short, dense and strong rooting system for faster establishment after transplanting

ii) To facilitate/ease lifting of seedlings/minimize root damage during transplanting (1mk)

18. **Control of damping off disease**

i) Reduce/remove shade

ii) Thinning to reduce overcrowding

iii) Reducing amount and frequency of watering

iv) Spaying with copper fungicides /appropriate fungicides (1mk)

19. **Effects of pests with both piercing and sucking mouth parts**

i) Suck plant sap causing wilting/stunted growth

ii) Some inject toxic saliva/secretions, which may cause distorted Growth/death of plants

iii) Lowers quality of crop products

iv) transmits/introduces disease agents

v) Inflicts wounds/openings which provide entry for secondary infections.

vi) Lowers crop yields (2mks)

20. **Natural factors that influence soil erosion**

i) Amount of rainfall/rainfall intensity

ii) slope/topography

iii) Type of soil

- iv) Size of watershed/catchment
- v) Length of the slope
- vi) Vegetation cover
- vii) Wind velocity/strength of wind
- viii) Soil depth (2mks)

21. **Opportunity cost is zero**

- i) When there are no alternatives/choices in enterprises
- ii) When production resources are not limited/are abundant/free (1mk)

SECTION B (20 MKS)

22. a) **smut/maize smut /Ear smut** (1mk)

- b)
 - i) sugarcane
 - ii) Sorghum
 - iii) Barley,
 - iv) Oats,
 - v) Millets
 - vi) Pasture grasses (accept specific examples e.g. nippier grass)
- (1 mk)

c) **Control for smut:**

- i) Plant certified seed
- ii) crop rotation/close season
- iii) Field hygiene/destroy crop residues

- iv) Hot water treatment (wheat and balley seeds) (2mks)
23. a) **To compare porosity/drainage/infiltration water holding capacity of different soils** (1mk)
- Accept words that mean companion e.g. identify drainage)
- b) Identification of soil samples.
- A - Sandy soil
- B -Loamy soil (1mk)
- c) Improve soil structure of soil sample c.
- i) Adding organic matter/manure
- ii) Liming
- iii) Sub soiling/proper silage
- iv) Draining away excess water (2mks)
24. a) Ridging (½)
- b) **Tertiary operation**
- Soil is dug in a continuous line; and heaped on the side(s); to form a bund/ridge/ridge/ a furrow is made and soil is heaped on the side to form a ridge/bund (mark as a whole) (1 ½ mk)
- c) **Advantages of planting on ridges.**
- i) Promotes tuber/root expansion/development
- ii) Facilitates harvesting of root crops
- iii) conserves soil and water
- iv) Facilitates drainage in water logged soils (2x1) (2 mks)

25. **Functions of ingredients**

a) Wood ash:-

- i) Improves level of phosphorus & potassium in the manure
- ii) Modifies soil PH to enhance microbial activities./reduces acidity

(1 mk)

b) Top soil

Introduces micro-organisms necessary for decomposition of organic materials.

(1mk)

26. Deficient nutrient elements

a) Practices during harvesting of tea.

i) Use of a plucking stick

Helps to maintain a uniform/level plucking table (1mk)

ii) Use of woven basket

. Facilitates air circulation/ aeration to prevent fermentation of tea

(1 mk)

b) i) Staking

(½ mk)

ii) **Reasons for staking**

i) Enhances production of clean fruits/improves quality of fruits.

ii) Helps in controlling diseases

iii) Facilitates spraying/harvesting of the crop/weeding/pruning

iv) Prevent infestation by soil borne pests (1 ½ mks)

SECTION C (40 MARKS)

Describe the production of dry beans under the following sub-heading

28. i) **varieties common in Kenya.**
- i) Rose coco/GLP2, ii) mwezi moja/GLP,iii) 1004, iv) Canadian wonder/
GLP24;; K74;
- v) Wairimu/Red haricot;v1) Mexican 142; Mwitemania (2mks)
- ii) **Selection and Preparation of planting materials;**
- i) Select varieties suited to the local ecological conditions
- ii) Select dry and mature seeds
- iii) Select sound seeds that are free from physical damage and winks
- iv) Dress seeds with appropriate chemicals to control soil borne pests
and diseases/seeds should be dressed against soil borne pests and
diseases.
- v) obtain seeds from a reputable source/certified seeds
(healthy pest and disease free) (3mks)
- vi) Seeds should be inoculated with right strain of bacteria if
necessary.
- iii) **Planting and weeding**
- i. Plant at the beginning of rains/timely planting/when soil/when soil
has enough moisture.

- ii. Make shallow furrows /holes at a depth of 3-5cm using appropriate tool
- iii. Apply phosphate fertilizer during planting
- iv. Place 2-4 seeds per hole and cover it up with the soil/seed rate of 50-60 kg/ha
- v. Spacing is 30-50 cm by 10-15 cm depending on the variety
- vi. Shallow weeding is done to avoid root damage
- vii. Weeding should be done when the field is dry to avoid spread of diseases when conditions are wet.
- viii. Keep the field weed free during early stages of growth
- ix. Apply fertilizer at due rate of 300 kg of ssp or 150 kg/ha of Dsp or 200 kg/ha of DAP.

b) **Safety precautions when using herbicides:**

- i) One should wear protective clothing such as masks, glove, overalls and boots.
- ii) Avoid inhaling the herbicides by not smoking while spraying/spray alone the direction of wind
- iii) Read the manufacturer's instructions and follow them strictly
- iv) Avoid sucking or blowing blocked nozzles
- v) Immediately after handling chemicals the user must wash thoroughly to remove chemical traces.
- vi) Herbicides should be stored in a safe place away from food and out of reach of children

- vii) Equipment used in herbicide application should not be washed in water sources used by humans and animals/to prevent pollution.
- viii) Equipment used in herbicide application should not be washed in water sources used by humans and animals/to prevent pollution.
- ix) Empty containers and left-overs should be properly disposed off in such a way that they will not pose danger to people, animals or the environment
- x) Avoid chemical spillage in places that are unintended/where it may cause danger to human and animals.
- xi) Equipment used should be washed thoroughly to avoid damage to crops/animals in subsequent operations
- xii) Avoid eating or handling food before washing (10 mks)

NB: (mark 1st 10)

29. **Explain five advantages of mulching in crop production.** (5 mks)

- a) Advantages mulching:
 - i) Has an insulating effect thus modifies/regulates soil temperatures
 - ii) Prevents water evaporation therefore moisture is retained in the soil for the plant use.
 - iii) Controls soil erosion by intercepting rain drops before they hit the soil, Reducing the speed of runoff and increasing rate of water infiltration.
 - iv) Organic mulch decomposes into humus thereby improving soil

structure/water holding capacity/drainage/aeration

- v) After decomposition it improves soil fertility by releasing nutrients.
- vi) Controls weed by covering the soil and sup repressing their growth
- vii) After decomposition organic mulch betters soil PH/increases calcium exchange capacity.

(5 mks)

(b) **Outline five activities that may be undertaken in organic farming.**

(5 mks)

- i) Mulching
- ii) Application of organic manure/organic fertilizers
- iii) Crop rotation
- iv) Use of medicinal plant products to control diseases and parasites
- v) Rearing of livestock on natural/feedstuffs without use of chemical additives
- vi) Physical/cultural /pests/weed/parasite and disease control

(Accept any specific measure of control) 5x1= (5 mks)

(c) **Discuss ten benefits a farmer is likely to get by using vegetative propagation**

in production of oranges

(10mks)

- i) Production/development of early maturing crop
- ii) Development of high yielding orange crop
- iii) Makes the plant to assume the desired shape/size e.g. budding spread sideways/easy to manage.
- iv) can obtain two or more orange varieties on the same root

stock.

- v) Ensures maintenance of genetic/clonal characteristics to ensure uniformity.
- vi) Facilitates development of drought resistant crop
- vii) It facilitate propagation of seedless orange varieties
- viii) Its used to develop tree plant that are less thorny
- ix) Facilitates fast multiplication of the desired crop/variety of oranges
- x) Is utilized to develop orange crop that is resistant to diseases
- xi) Is utilized in repair/treatment of damaged parts of orange trees.

(10 mks)

- 30 a) **Explain then roles of a farm manager in agricultural production.**

(10 mks)

Roles of a farm manager:

- i. Short- term planning for quick decision to avoid losses when where is an urgent activity.
- ii. Long-term planning: -Collecting information relevant to the farm enterprises.
E.g. marketing activities, production techniques
- iii. Information gathering: - Collecting information relevant to the farm enterprises
e.g. marketing activities, production techniques
- iv. Budgeting :- for future income and expenses as proposed in the farm plan.

- v. Comparing standards of the farm/enterprises with the set standards and making appropriate adjustments
- vi. Detects weaknesses and constraints and finds ways of overcoming them
- vii. Keeps up to date farm records and uses them in daily running of the farm
- viii. Implements farm decisions
- ix. Guides and supervises the implementation of the farm plan of
- x. Compares performance of the farm with that of other similar farms
- xi. Makes predictions of the farm business
- xii. Makes predictions of the farm business
- xiii. Is the accounting officer on all financial transactions of the farm

(10 mks)

b) Describe five roles of Agricultural based women groups in farming (5 mks)

Roles of women Groups:

- i. Loaning members to finance their farming activities.
- ii. Enlightening members on improved/modern farming techniques/emerging issues
- iii. Establish income generating activities for members
- iv. Assist in marketing agricultural produce for the members.
- v. Buy farm inputs in bulk and sell to members at a low price
- vi. Collectively assist members in their farm operations
- vii. Guarantees members for loans
- viii. Gathering information on intended projects/feasibility study.
- ix. Acts as agencies of change in a community. (5mks)

c) Describe land preparation and planting in carrot production. (5 mks)

land preparation and planting in carrot production.

- i. Clearing the bush using appropriate tool
- ii. Primary cultivation using appropriate tool
- iii. Secondary cultivation/harrowing to a fine tilth
- iv. Make drills 30 cm apart and 1 cm apart and 1 cm deep
- v. Apply phosphates /DSP/DAP /MAP fertilizer during planting
- vi. Sow seeds along the drills
- vii. Cover and firm the seeds with soil
- viii. Apply at the rate of 90 kg/ha of DSP/DAP
- ix. Remove an perennial weeds
- x. Plant at due onset of rains/when the soil has enough moisture.

AGRICULTURE PAPER 2 MARKING SCHEME 2009

SECTION A

	Cattle	Pigs	Poultry
Young from birth/batching to weaning	Calf	Piglet	
Young female before fist parturition/laying	Heifer		Pullet
Mature male for breeding		Boar	Cock

(6 x ½)

(3 mks)

2. Viral diseases:

- a) Cattle
 - lumpy skin disease
 - cattle plaque/Rinderpest #mad cow disease
 - foot and Mouth disease # Riftvalley fever (1 mk)
- b) Poultry
 - Newcastle # Avian flue
 - Fowl pox # marecks disease
 - Gumboro/infection bursa (1 mk)

3. Intermediate hosts.

- a) Liver fluke (Fasciola spp) - French water snail/Lymusea translated
- b) Tapeworm (Taenia spp) - pig/cattle (1mk)

4. **Reasons for feeding colostrums:**

- It is highly digestible hence suitable for the digestive system which is not fully developed
- It is highly nutritious
- It contains antibodies enabling the young stock to resist early infections
- It has a laxative effect
- It is highly palatable. (2 mks)

5. **Advantages of artificial method of calf rearing:**

- Farmer is able to keep accurate records of milk yield
- Easy to regulate the amount of milk taken by the calf
- cows produce milk even in the absence of the calves
- allows for maintenance of high standard of hygiene during milking
- there is a possibility of the farmer selling more milk thereby maximizing profits.

(2 mks)

6. **Harmful effects of tsetse flies:**

- Transmit the disease trypanosomiasis.
- suck blood thereby causing anaemia
- Their bites cause damage to skins
- bites cause wounds which may act as routes for secondary infections by pathogens cause irritation to the animal.

(2mks)

7. **Reasons for raddling in sheep management:**

- To help identify rams which have mated with ewes/those incapable of mating
- To identify ewes that have been served/fertile/those that are infertile/ not served.

8. **Reasons for steaming up;**

- Accustom the cow to concentrate feeding
- ensures birth of a healthy calf
- Build up energy for parturition
- Increases and maintains high mil yield after birth/stimulate alveoli cells development
- Promotes good health of the cow/mother
- Provide nutrient for maximum foetal growth. (2 mks)

9. **Limitations of using hydroelectric power**

- Very high initial capital required for installation
- If the market is not large, it becomes uneconomical to install
- Water supply can become unreliable in case of prolonged drought.
- The river may change its course leading to wasted investment
- Not all farmers can afford the use of electric appliances
- Lack of skilled personnel
- Lack of river on individual farms (2 mks)

10. **Reasons for maintaining a wheelbarrow:**

- To reduce cost of repair/replacement
- To improve efficiency
- To prolong life of the wheelbarrow
- To reduce injury/accident incidences (1mk)

11. a) bastard file used for smoothing metal while rasp file is used for smoothing wood. (1mk) (mark as a whole)

b) Copying saw is used for cutting curves wood while hacksaw is used for Cutting metal/Lastics

12. **Disease caused by Protozoa:**

- East cost Fever (E.C.F.)
- Anaplasmosis/gall sickness
- Coccidiosis (Nagana)
- red water/Babesiosis
- Corridor disease
- Nairobi sheep disease
- Trichomoniasis
- Sweating disease.

13. **Ways of restraining cattle:**

- Use of ropes/halters/casting

- Use of lead stick and bull ring
- Use of crush
- Use of crush
- Use of head-yoke
- Use of holding/isolation pen/yard

(4x ½) 2mks)

- 14 a) Incubation period:- is the duration between a disease causing organism infests/enters an animal and the time the first disease symptoms show.
- b) Mortality rate:- Is the likelihood of death occurring in case of disease outbreak which is expressed as a percentage of the affected animals that die.

15. **Conditions inhibiting milk let-down.**

- Changing of milking routine
- Strange surrounding/strangers/sudden noise/storm
- Poor milking techniques/pain
- Sickness (1mk)

16. **Reasons for rearing indigenous cattle in marginal areas of Kenya:**

- have fairly tolerance to high temperature
- Have considerable tolerance to tropical diseases
- can walk for long distances in search of pastures and water
- Have ability to survive on low quality pasture/forage.
- are able to survive on less amount of food/water without seriously affecting performance.

(4 ½ mks)

17. **Maintaining conditions in artificial incubation**

a) Proper ventilation:

- For air/oxygen circulation for embryonic gaseous exchange

-for air circulation to control humidity (1mk)

b) Relative humidity at 60%

-Low humidity causes embryonic mortality due to loss of moisture

-High humidity lowers hatchability and produces abnormal bigger chicks

which look marshy. (1mk)

SECTION B

a) Appropriate milking technique

-A/ squeeze method (1mk)

b) Squeeze method

-Teat is grasped at base between the thumb and the index finger.

-The other fingers are sequentially tightened starting with index fingers to compress the teat so as to expel the milk into a container

-all fingers are relaxed finger and the thumb should hold the base of the

teat firmly to prevent back flow of milk into glad cistern. (2 mks)

c) **Disadvantages of using wrong milking techniques**

-It is injurious and leads to formation of scar tissue/physical injury on the teat cistern

-The pulling effect leads to tearing of teat tissues making them more prone to bacteria invasion/mastitis.

-Chances of milk contamination are high because the application of milking salve/teat dipping becomes necessary for lubrication.

(2 mks)

19. a) **Parts labeled**

- B-Inner shell membrane
- C-outer shell membrane
- D-Albumen/egg white
- F- Chalaza

(2mks)

- b)
- Texture/ smoothness of the shell
 - Absence of cracks on the shell
 - Cleanliness/absence of the shell
 - Cleanliness/absence of blood stains
 - Oval in shape.

(2mks)

c) **Function of the part labeled E.**

- Provides nutrients for the developing embryo/chick. (1 mk)

20. a) routine management practice:

- Hoof trimming (1mk)

b) **Reasons for the practice:**

- to prevent lameness/difficulty in walking
- To control foot rot
- To ease mating

(2mks)

21. a) i) fowl pox/ cutaneous pox/avian pox
ii) Virus /avian pox virus (1 mk)
- b) Other symptoms
-watery discharge through eyes and nose
-Difficult breathing and swallowing
-Dullness
-Loss of appetite
-Emaciation (2mks)
- c) **Control Measures**
- Vaccination
- Removal killing of all affected birds
- Observe proper hygiene
- Isolation of affected birds (2mks)
22. a) - elastrator (1 mk)
- b) **Use of the equipment:**
- Stretching/enlarging/Operating the rubber ring during castration/dehorning/clocking.
(Reject Castration/dehorning/clocking as an answer) (1mk)

SECTION C 40 MKS

- 23 a) signs of ill-health

- Behaviour of the animal**- aggressiveness, over excitement or produces abnormal sound
 - isolating from others/photophobic
- animal movement**-limping/lameness/strained gait
- General appearance**: restless, dull, less alert or less response to touch/abnormal posture
- skin/coat**: -ruffled/starry coat/loss of hair/dull skin/parts peeling off/cracking/wounds/lesions/swellings
- Mucous membrane**:-dull red/pale /dry/ having copious discharge
- Production /performance level**:-Sudden decline in production/performance/loss of weight and condition.
- Pulse rate:-radical departure from the normal range
- respiratory rate: abnormal deviation from the normal range
- Body Temperature**: Abnormal temperature from the normal range/too high/too low
- appetite and feeding**:-Increased/lack of appetite/abnormal chewing/swallowing/feeding on abnormal food substances
- Urination**:-abnormal urine colour matter in terms of consistency/smell/colour, difficult urination/less or high frequency
- profuse salivation
- lachumation

-defaecation process:-abnormal faecal matter in terms of

consistency/smell/colour presence of parasite/egg

segment/blood stains/frequency (10 mks)

b) **Process of digestion in anon-rumnant**

i) **Mouth.**

- food is chewed to break and increase surface area for enzyme action
- food is mixed with saliva which contains salivary amylase and lubricates the food
- salivary amylase converts starch to Maltose. (1 mk)

ii) **Stomach**

- Food is mixed with gastric juice/dilute hydrochloric acid
- Hydrochloric acid provides optimum PH for enzyme/ingested with food./converts pepsitrogen to pepsin
- Pepsin breaks down proteins to and peptones peptides enzyme/pepsin action
- Rennin coagulates milk to increase the surface for the enzymes/pepsin action

iii) **Small intestines**

- In the duodenum, food is mixed with bile and pancreatic juice (pancreatic amylase, lipase and typsin).
- Bile emulsifies fats to increase the surface area for enzyme action/bile has salt to neutralize acid from stomach.

- Pancreatic amylase converts fats to glycerol and fatty acids
- Trypsin converts proteins to peptones and peptides
- In the rest of small intestines, food is mixed with intestinal juice/erepsin/peptidase maltase, sucrose/invertase & lactase enzymes).
- Erepsin/peptidase convert peptones and peptides to amino acids
- Maltase converts maltose to glucose
- Sucrase(invertase) converts sucrose to glucose and galactose
- Digested food materials are absorbed in the ileum
- Undigested and indigestible food materials then move to the large intestines for further digestion. (6 mks)

24. a) **Benefits of using biogas**

- 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, etc
- does not pollute the environment/environmental friendly
- Is a sustainable/renewable source of energy?
- By products/fermented slurry is used as manure
- Income generating
- Raw materials locally available

b) **Advantages of using a subsoiler**

- It breaks hard pans

- It improves drainage/water infiltration
- It improves soil aeration
- It destroys deep rooted weeds
- It facilitates growth and development of root crops/deep rooted crops
- It loosens top soil without bringing the subsoil to the surface to ensure conservation/minimum tillage/least soil pulverization.

(5 mks)

c) **Factors affecting siting of a bee hive:**

- Availability of water;- should be available within a 3 km radius to facilitate collection by bees.
- Availability of flowers:- should be readily available to facilitate collection of Pollen and nectar by bees.
- Noise and other disturbances: Place should be free from pests and diseases
- Dampness and bad odours: - site should be free from dampness and bad odours

(Factors 5x1)

(explanation 5x1)

(10 mks)

25. a) **Life cycle of beef /pork tapeworm:**

- Mature segments/proglottids 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 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.

(Mark until the order is broken)

(10 mks)

b) Process of egg formation

Ovary: Produces the ovum

(1 mk)

Funnel/Infundibulum:

- Chalazae are added and the egg moves to the magnum.
- Fertilization takes place here
- receives ovum

(1 mk)

Magnum:

- Light album is added and they yolk moves into the isthmus. (1mk)

Isthmus:

- Water mineral salts and vitamins are added

- Shell membranes are also added and the eggs moves to the uterus
- addition of albumen is completed (2mks)

Uterus/shell gland:

- Shell is added around the egg/it contains calcium deposits
- Shell pigmentation occurs here (3 x ½) (2mks)

Vagina:

- Egg is temporarily stored
- Egg is inverted to be laid with the broad end fist
- Egg is lubricated (2mks)

(Mark correct function and with correct part-ignore the order)