MACHAKOS COUNTY

443/2
AGRICULTURE
PAPER 2
MARKING SCHEME

SECTION A (30 MARKS)

1.
- Rhode Island
- Light Sussex
- New Hampshire red
- Black Australops (4x ½ =2mks)

2.
- Lose vitality
- Lose weight
- Have retarded growth

3.
- Possible to compare animals of different age groups since heifer locations are known
- Possible to make direct comparison of bulls at different AI centres.
- It's accurate
- Eliminates differences brought out by the environment since average performance of herd is used.

4.
- Facilitate tupping/mating
- Prevents blowfly infestation
- Gives good fat distribution throughout the body. (Any 2x ½ =1mk)

5.
- Speed reduction mechanism
- Enables one of the wheels to move faster than the other when negotiating corners. (2x ½ =1mk)

6.
- Retarded growth
- Lowered productivity
- Lowered reproductivity due to reduced animal vigour
- Lowered resistance to diseases or infections. (any 4x ½ =2mks)

7.
- Poor ventilation
- Overcrowding
- Age-young animals
- Effects of diarrhoea/other illnesses (4x ½ =2mks)

8.
- Taking the cow into the milking shade
- Rattling sound of buckets
- Sight of a milk man/milk woman
- Sight or smell of food in the feed trough
- Massaging or washing of the udder with warm water.
- Suckling by the calf
- Sight of the calf for cows inclined to suckling calves (any 4x ½ =2mks)

9.
- Where land is not accessible by tractors
- Where the land is steep/very steep slopes
- Small pieces of land
- Lands that are irregularly shaped

- Cost of hiring tractors is high
- Other sources of power unavailable. (any 4x ½ =2mks)

10.
- During confinement in sick yard/confined grazing units.
- Stall feeding/watering
- When transporting animals to markets/agricultural shows/slaughter houses.
- During service of the animal e.g. AI
- During land spraying against external parasites.
- During removal or harvesting of livestock products e.g. honey/milk
- When carrying out routine management operations e.g. deworming/castration/dehorning/hoof trimming/debeaking/injection of drugs. (any 4x ½ =2mks)

11.
- Availability of capital
- Security
- Market availability
- Labour availability
- Knowledge of the farmer
- Availability of land for rearing
- Topography of the land.
- Availability of appropriate equipment. (any 4x ½ =2mks)

12.
- Cost of feedstuff
- Availability
- Nutritional composition
- Physical/processing nature of feedstuff. (4x ½ =2mks)

13.
- Cleaning the fish to remove mud/any worms
- Cleaning abdominal cavity thoroughly
- Keep fish in open containers
- Removing scales and slime
- Opening the fish on the side to remove gut and the intestines/ gutting. (any 4x ½ =2mks)

14.
- Take many years to grow and make an effective fence.
- Cannot be used for paddocking because they occupy a wide space
- Hedges can be used as hiding places for rodents and thieves.
- Thorny species cause injuries to livestock
- Their growth may be irregular thus allowing gaps for animals and thieves to pass through.

(any 4x ½ =2mks)

15. a)
- Use of prophylactic drugs
- Carrying out regular vaccinations
- Control of vectors
- Treatment of sick animals. (4x ½ =2mks)

b)
- Burning the infested pastures
- Interfering with or altering the ticks environment.
- Fencing off the pasture land and farm
- Starving ticks to death
- Handpicking ticks from livestock and killing them. (any 4x ½ =2mks)

16.
- Have microorganisms to digest cellulose

- Absorb water and the byproducts of microbial digestion. (2x ½ =1mk)

SECTION B (20 MARKS)

17. a) Boom sprayers (1x1=1)
    b) Used for applying pesticides/herbicides/foliar feeds. (1x1=1)
    c)
    - Tank of sprayer should be drained before and after use.
    - Tank and all parts should be washed thoroughly with clean water and dried.
    - All parts prone to rusting and painted. (any 1x3=3mks)
18. a) A-Ring spanner
    B-Open ended spanner
    b) Has an adjusting nut which is used to close/open the jaws depending on the size of the nut to be opened or tightened. (1x1=1mk)
    c)
    - Apply grease to rotating part
    - Store properly in a tool rack
19. a) Calf pen
    b) Have slatted floor (1x1=1)
    c)
    - Should be clean.
    - Leaking roof repaired
    - Walls to be white washed to prevent lead poisoning
    - Keep dry and warm by placing dry litter. (any 3x1=3mks)
20. a)
    - I-Inner shell membrane
    - J-Outer shell membrane
    - K-Albumen
    - M-Challazae

    b)
    - Smoothness of the shell
    - Cleanliness
    - Oval in shape
    - Absence of cracks on the shell (4x ½ =2mks)

    c) Provide nutrients for the developing chick (1x1=1)

SECTION C (40 MARKS)

21. **a)**
    - Provide energy/ maintenance of body temperature
    - For growth and repair of body tissues
    - For maintenance of good health
    - Production of various products
    - Enhance reproduction. (5x1=5mks)

b)
- Should be of age/mature 5-7 months old/90-100kg live weight
- Good mothering ability
- Able to grow fast
- Good conformation
- With no physical defects
- Healthy
- Has 12-14 teats
- Highly prolific
- Able to withstand heat stress during mating. (any 8x1=8mks)

c)

- Proper feeding
- Control of internal parasites
- Control of external parasites
- Vaccination
- Hoof trimming
- Provision of adequate clean water
- Treat in case of infection (7x1=7mks)

22. a)

- Repair/replace broken parts
- Regular cleaning to remove dirt
- Dust/fumigate/spray to control parasites and diseases
- Apply old engine oil on timber parts.
- Ensure good drainage around the house
- Maintain a footbath at the entrance. (6x1=6mks)

b)

- The milkman should be clean
- Test for mastitis before milking
- Milk person should be healthy
- Ensure utensils/equipment are clean
- Ensure milking parlour is clean
- Ensure milking herd is free from zoonotic diseases e.g. TB
- Cows with mastitis should be milked last
- Clean the udder
- Cover the milk
- Avoid feeds/weeds that would taint milk just before milking.
- Proper storage of milk/cool dry place. (any 8x1=8mks)

c)

- Ox-draw plough mould board is lighter hence does not compact the soil as much as the tractor drawn mould board plough.
- Ox-plough can be used for more farm operations e.g. weeding, ploughing, harvesting root crop than tractor mould board.
- Ox plough requires less skills to operate compared to the tractor plough.
- Tractor plough is faster than ox plough hence can plough a large area within a short time.
- Source of power for ox plough is not as reliable as the source of power for tractor plough.
- Ox plough relatively shallow compared to tractor drawn plough that plough deeper.
- Ox plough can be used in steeper slopes where tractor plough cannot plough.
- Ox plough requires more people to operate than tractor plough.
- Ox plough is cheaper to buy than tractor plough.
- Ox plough is cheaper to maintain than tractor plough. (10 x1=10mks)

23. a)

- Makes farm operations timely/faster
- Economizes on labour
- Work is done more efficiently
- Reduces drudgery/can accomplish heavy task
- Cheaper per unit work done. (6x1=6mks)

b)

i) <u>Theirelia</u> <u>parva</u> (1x1=1)

ii)

- Swollen lymph nodes especially at base of ears, shoulders and stifle joints

- High temperature/fever
- Produce a lot of saliva/profuse salivation
- A lot of tears production/lachrimation
- Difficulty in breathing
- Haemorrhages in the vulva and mouth
- Coughing
- Sight impairment (any 5x1=5mks)

iii)

- Ticks controlled through regular dipping, spraying or hand dressing using appropriate acaricides.
- Fence to keep out strange animals away
- Treatment using appropriate drugs. (3x1=3mks)

c)

- Sudden change in routine
- Diseases and pest infestation.
- Lack of food and water
- Strangers and predators in the house.
- Sudden noise such as that of tractor, plane
- Poor handling of birds
- Overcrowding
- Climate weather change
- Poor lighting in the house
- Introduction of new birds
- Unbalanced diet. (any 5x1=5mks)

MACHAKOS COUNTY

443/1
AGRICULTURE
PAPER 1
MARKING SCHEME

SECTION A (30 MARKS)

1. a) Involves sowing small seeded pasture grasses under the established arable crop. (1x1=1mark)
   b) Sowing of one pasture crop in an established or existing pasture e.g. planting desmodium over Rhodes grass. (1x1=1mark)
   c) Process where during decaying proteins from dead animals and plants are broken to ammonia and other substances by putrefying bacteria. (1x1=1mark)

2.
- Wood should be only 1 year old or less
- Healthy and well developed visible vegetative buds
- Be mature and relatively hard shoots preferably from middle portion.
- Obtained from centre portion $^2/_3$ of the shoot base
- Pathogen free
- From high yielding mother trees

(any $4x^1/_2$=2 mks)

3.
- Cheaper and more convenient to apply saving on time, cost and labour
- Balanced in all plant nutrients
- Easy to store as they do not form lumps when stored for long (any $2x^1/_2$=1mks)

4.
- Contains more nutrients and organic matter for crop growth
- Provides good medium for root growth and support
- Facilitate aeration and good drainage
- Discourages soil erosion and surface run off.

($4x^1/_2$=2 mks)

5.
- Application of organic matter/manure into the soil
- Minimum tillage
- Tilling at the right moisture content
- Crop rotation
- Cover cropping
- Mulching
- Intercropping
- Mixed cropping

(any $4x^1/_2$=2 mks)

6.
- Makes the seed come into contacts with the soil moisture
- Promote uniform germination of the tiny seeds
- Protect the top soil layer and tiny seeds from being blown away by wind. (any 2x1=2mks)

7.
- Relates to production of a given quantity of product in a given period of time.
- When all costs are analysed and converted into monetary value they help to indicate the most profitable level of production.
- Used to calculate gross margins

(4x ½ =2 mks)

8.
- Plant population and seed rates
- Time spent in planting
- Weed control.

(any 2x ½ = 1mk)

9.
- Invoice
- Statement of accounts
- Bank statements
- Receipts
- Delivery note
- Purchase order. (any 3x ½ =1 ½ mks)

10.
- Such companies engage in monopolistic practices
- If management is insufficient big losses be may incurred
- Where ownership is foreign e.g. Delmonte benefits to the country in which estate is situated are limited to employment creation and paying taxes to government.
- Manner in which they are organized are liable to labour and social problems.

(any 4x ½ =2 mks)

11.
- Leaf chlorosis
- Leaf curling
- Mosaic
- Malformations
- Rosetting.

(4x ½ =2 mks)

12.
- Well sheltered place
- Security
- Previous cropping

- Topography
- Nearest to the water source
- Type of the soil.

13. Seed dressing-coating of seeds with fungicides or pesticides to protect them against soil borne diseases and pest. (1x1=2mks)
Seed inoculation-coating of legume seeds with the right strain of nitrogen fixing bacteria, Rhizobium (1x1=1mk)

14.
- Encourage fresh regrowth
- Improve yield in the next season
- Reduce incidences of bud diseases. (1x ½ =3 mks)

15.
- Proper supervision of land
- Economic use of time and saving on transportation cost
- Agricultural advice by extension officer
- Soil conservation and land improvement
- Constructions of permanent structures e.g. fencing and building
- Economic operations of activities
- Weeds, pest and diseases control is enhanced
- Sound farm planning and adoption of crop rotation programme. (5x ½ =2 ½ mks)

SECTION B (20 MARKS)

16. i)

MAKAU'S FARM
Balance sheet
As at 30th June 2011

Liabilities	Sh	Cts	Assets	Sh	Cts
Current liabilities			Current assets		
Creditors	49,000	00	Cash at hand	15,000	00
Equity overdraft	24,000	00	Cash in bank	50,000	00
			Debtors	18,000	00
			Goats	48,000	00
Long term liabilities			Fixed assets		
Loan: Equity			Oxplough	20,000	00
Total liabilities	180,000	00	Working tools	15,000	00
	253,000	00	Land	70,000	00
			Networth	17,000	00
Total	253,000	00		253,000	00

(6mks)

ii) Its insolvent, the value of liabilities exceeds assets value, the business can't meet all that it owes other firms. (2x1= 2mks)

17. a) root pruning (1x1=1mk)
b)
- Tree seedlings develop strong, short and dense roots systems
- Minimizes damage to seedlings during transplanting
- Lifting seedlings using transplanting is easier. (3x1=3mks)

c)
- Agrisilviculture
- Silvopastoral
- Agrosilvopastoral ($3x^1/_2$=1 ½ mks)

18. i) American bollworm (1x1=1mk)
ii) Spraying with insecticides
Crop rotation (2x1=2 mks)
iii) Beans
Tomatoes (1x1=1mk)

19. a) Staking (1x1=1mk)
b)

- Production of clean fruits
- Easy to harvest/spray
- Increase yield as leaves are well exposed for photosynthesis
- Prevent/protects fruits from rotting due to contact with soil. (4x1=4mks)

c) Trellising (1x1=1mk)

SECTION C (4O MARKS)

20. a)
- Bargaining for better prices of farm produce
- Ensuring adequate and timely supply of farm produce.
- Bargaining for reasonable and affordable prices of farm inputs
- Publishing monthly magazine known as "farmers" voice
- Offering technical services to farmers.
- Provision of better infrastructure e.g. roads/electricity/telephone services to facilitate quick delivery of farm produce.
- Provision of loan facilities
- Adequate control of crop and livestock pest and diseases.
- Looking for markets of farmers produce both locally and overseas
- Representing Kenyan farmers in the international Federation of Agricultural producers.

(Any 5x1=5 mks)

b)
- Size of the farm
- Environmental factors
- The current trend in labour market
- Farmer's objectives and preferences
- Possible production enterprises
- Existing market conditions and price trends. (5x1=5mks)

c)
- Picked manually
- Grading of seed cotton starts during harvesting.
- Seed is sorted into two grades AR (safi) and BR (fifi)
- AR is the first grade free from seed damage and foreign matter/ should be white
- BR may not have all the required qualities
- Picker to have two containers one for grade AR and the other for grade BR
- Care should be taken to ensure no foreign matter such as leaves/ small twigs are mixed with seed cotton.
- Picking is avoided when cotton is wet due to rain/morning dew.
- Sisal bags not used because the fibres may mix with cotton causing problems during ginning.

(10x1=10mks)

21. i. a)
- Seedbed dug deeply (depth of 20cm)
- Soil worked to a fine tilth
- No application of manure for it induces forking
- Makes rows of drills 30cm apart. (Any 3x1=3mks)

b)
- Mature at 3-5 months
- Done depending on the use intended for the crop
- Harvesting by pulling out the crop
- Ensure soil is moist during harvesting
- Alternatively use a plough called carrot lifter to loosen the soil before lifting.
- Mature carrot tubers are 2½ -3cm thick at top (any 4x1=4 mks)

ii)
- **Mulching-**smothers weeds
- **Cover cropping**-smothers weeds

- **Crop rotation**-when some crops that are associated with a certain weed are rotated weeds do not germinate e.g. striga in cereals and sugarcane farms won't germinate if dicots are grown.
- **Timely planting**-Allows crops to establish early before introduction to weeds.
- **Clean seedbed**-This starts crops well and effectively compete with weeds
- **Flooding**-Mainly in rice fields - discourage non aquatic weeds.
- **Use of clean seed/planting material**- prevents the introduction of weeds to the farm land.
- **Proper spacing**-helps to create little space for weed growth and forming a canopy which suppress weeds.

(any 5x2=10mks)

iii)

- Essential for protein synthesis
- Increase the oil content in oil crops e.g. groundnuts/soya beans.
- Essentials in the formation of some vitamins e.g. Vitamin B1
- Essential for the activation and activities of certain enzymes e.g. co-enzyme A
- Influences nitrogen fixation by legumes.
- Aids in the formation of cells
- Essential in chlorophyll formation
- Essential for carbohydrate metabolism. (any 3x1=3 mks)

22. a)

- **Soil fertility**-materials derived from fertile origins end up in different destination
- **Creation of lakes**- moulds or blocks of rocks have dammed rivers courses causing temporarily lakes
- **Damaging property and causing loss of life** e.g. farmland, buildings, homes, lines of communications/transport routes/loss of life.
- **Soil erosion**-on steep slopes
- **Permanent scars on landscape**-No support for vegetation and remain unattractive.
- **Tourist attraction**-e.g. weeping rocks of Kakamega or kit Mikai in Seme, Kisumu County

(Any 6x1=6mks)

b)

- Help to propagate clones that cannot be propagated in any other way
- Helps to shorten maturing age
- Possible to grow more than one type of fruit on same plants.
- Plant with desirable root characteristics e.g. disease resistance, vigorous root system but with undesirable products to produce desirable products.
- Helps to repair damaged plants (any 4x1=4mks)

c)

- Training-Formally or informally-formally in colleges/schools. Improved through farmers training centres, field days, agricultural shows, demonstration farms.
- Farm mechanisation-Incorporating machinery in farm's operation
- Giving incentives and improving terms and conditions of services
- Labour supervision-keeping proper and up to date records on the time work commences and ends, type of work and amount done, records of absenteeism, malingering, theft/robbery. Etc.
- Assigning specific task-governed by labour skills, one clearly knows clearly their duties

(any 5x2=10mks)