



CEKENAS END OF TERM TWO EXAM- 2022

FORM FOUR EXAM

Kenya Certificate of Secondary Education.

(K.C.S.E)

Agriculture paper 1

443/1

Marking scheme

1. Aspects of light

- Light wavelength
- Light intensity
- Light duration

($\frac{1}{2}$)

x 3= 1 $\frac{1}{2}$ mks)

2. Factors which determine depth of ploughing

- Type of crop/ rooting system of crop
- Type of implement available
- Type of soil
- Soil moisture content during ploughing time
- Presence of certain types of weeds e.g. couch grass

- Source of power

($\frac{1}{2}$ x 4= 2mks)

3. Advantages of using farm yard manure instead of straight fertilizer.

- Supplies a variety of plant nutrients
- Has a longer residual effect
- Promotes microbial activities in the soil
- It is locally/ easily available
- Moderates the soil pH/ increases aeration exchange capacity
- Farm yard manure improves soil structure/ improves soil water holding capacity.

($\frac{1}{2}$ x 4= 2mks)

4. Methods of reclaiming land

- Draining the land
- Controlling of soil erosion
- Irrigation
- Afforestation/ re- afforestation
- Control of tsetse flies

($\frac{1}{2}$ x 4= 2mks)

5. Benefits of land consolidation

- There is proper supervision of the farm
- Reduces costs on travelling
- Rotational program can be easily affected
- Mechanization is possible because the areas are large
- Easy to get extension services
- Allows good farm planning
- It enhances proper pests, diseases and weed control
- Encourages long term investments

($\frac{1}{2}$ x 4= 2mks)

6. Factors that determine spacing of maize crops.

- Soil moisture content
- Soil fertility
- Machinery to be used
- Intended use of the crop
- Prevalence of pests and diseases
- Cropping system used
- Number of seeds per hole.

($\frac{1}{2}$ x 4= 2mks)

7. Factors affecting quality of hay

- Stage at which the grass is cut/ harvested
- Efficiency in preparation / how well the grass is dried/ turned
- Methods of storage/ storage conditions
- Species/ type of forage crop/ nutritional composition of forage
- Length of drying period/ extent of drying
- Weather conditions during drying period

($\frac{1}{2}$ x 4= 2mks)

8. Factors affecting effectiveness of a pesticide

- Concentration of the pesticides
- Weather conditions during application
- Stage of development of the pesticide
- Rate of application of pesticide

- Mode of action of the pesticide.

($\frac{1}{2} \times 4 = 2\text{mks}$)

9. Types of crop records

- Field operation records
- Crop production records
- Inventory records/ consumable goods inventory/ permanent goods inventory
- Marketing records
- Labour records

($\frac{1}{2} \times 4 = 2\text{mks}$)

10. Importance of agroforestry

- Remedy for deforestation/ source of firewood
- Source of income when timber/ fodder/ poles/ fruits are sold
- Aesthetic value/ beauty
- Labour saving
- Environment benefits/ control soil erosion/ improve water retention/ enrich soil through leaf litter and nitrogen fixation/ improve water catchment.

($\frac{1}{2} \times 4 = 2\text{mks}$)

11. Characteristics of a good site for a nursery bed

- Near a reliable water source
- Well drained area with deep fertile soils
- Gently sloping area
- Secure area
- Sheltered area
- Should not have been used for the same crop species in the previous season
- Should be accessible

($\frac{1}{2} \times 4 = 2\text{mks}$)

12. Methods of farming

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

($\frac{1}{2} \times 4 = 2\text{mks}$)

13. Natural factors that influence soil erosion

- Amount of rainfall/ rainfall intensity
- Slope/ topography
- Type of soil
- Size of water shed/ catchment
- Length of the slope

- Vegetation cover
- Wind velocity/ strength of the wind
- Soil depth

($\frac{1}{2} \times 4 = 2\text{mks}$)

14. Conditions observed when harvesting cotton

- Do not pick the lint when it is wet
- Pick on weekly basis
- Avoid dry twigs or leaves contaminating the cotton
- Do not use sisal bags to hold cotton as the sisal fibres may contaminate lint. ($\frac{1}{2} \times 4 = 2\text{mks}$)

15. Uses of water on the farm

- For diluting/ mixing chemicals used to control pests, diseases, weeds
- For watering livestock e.g drinking
- Watering plants I.e. irrigation
- In processing farm produce e.g. coffee, carrots etc.
- Domestic use e.g. drinking, cooking
- For rearing fish
- Mixing concrete in construction
- Recreation e.g. swimming pool
- Cooling and running machine engines

($\frac{1}{2} \times 4 = 2\text{mks}$)

16. Types of surface irrigation

- Furrow irrigation
- Basin irrigation
- Flood irrigation

($\frac{1}{2}$)

$\times 3 = 1\frac{1}{2}\text{mks}$)

17. Pollarding is cutting the branches and the tree crown.

Coppicing is cutting main stem completely at a height of 30cm above the ground.

($1 \times 1 = 1\text{mk}$)

SECTION B

18. a) M – Trellising

N – Propping

b) Reasons for carrying out practice M

- Enhance production of clean fruits/ improves quality of fruits
- Help in controlling diseases
- Facilitates spraying/ harvesting of the crop

- Prevents infestation by soil borne pests

(1x 3= 3mks)

19. a) Identity of weeds

R – Mexican Marigold

S – Bristly fox tail / love grass

T – Witch weed/ Striga spp

U – Double thorn

(½ x 4= 2mks)

b) Reasons why weeds S and U are difficult to control.

S – Easily dispersed by animals

U – Has thorns which injure the workers.

(1 x 2= 2mks)

c) Why R is not suitable on dairy animals

- Taints the milk

(½ x 1= ½mk)

d) Which weed is parasitic to cereals?

- T

(½ x 1= ½mk)

20. a) Type of silo – Trench Silo

(1 x 1 = 1mark)

b) Use of part M and N

M – Prevents entry of water into the silage

N – Drains away water

(1x 2= 2mks)

c) Ways of ensuring anaerobic conditions during silage making.

- Fast filling of silo

- Proper compaction

- Sealing with polythene paper and soil.

(1x 2= 2mks)

21. a) Soil structure X and Y

X – Platy soil structure

Y – Blocky structure

(1 x 2= 2mks)

b) Soil structure not suitable for growing maize

X / platy structure

(1x 1= 1mk)

c) Methods of improving soil structure

- Add organic matter/ organic manure to the soil/ F.Y.M/ Compost manure.

- Add liming materials / Calcium Ammonium Nitrate

SECTION C

22.a) Overcoming risks and uncertainties

- Diversification of enterprises to avoid total loss

- Insurance against losses- for compensation in case of failure.

- Inventory marketing/ strategic farming keeping farm product and selling at when prices are favourable

- Flexible enterprises- engaging in enterprises that can be stopped or changed

- Rationing of inputs – use of sufficient inputs such that losses are not too high

- Contract farming – making arrangements with marketing agencies in advance to cater for price fluctuations

- Selecting more certain enterprises – selection of enterprises that do well in the area/ tried through research.

22. b) Explain how various practices carried out in the field help to control crop diseases.

(8 marks)

- Crop rotation- helps to break life cycles of disease causing organisms

- Roguing- to prevent further spread of the disease.

- Planting disease free planting materials/ use of certified seeds- prevents introduction of pathogens in the field.

- Close season- helps to break the life cycle of pathogens.

- Timely/early planting- help crop to establish faster before attack

- Proper spacing- creates unfavorable micro-climate for some pathogens.

- Weed control- eliminate weeds that could be alternate hosts for particular pathogens.

- Use of resistant varieties- ensure crop is not attacked by the pathogen.

- Use of clean equipment/tools- reduces contamination with disease causing organisms hence prevent spreading of the disease from one plant to the other.

- Quarantine-prevent introduction of pathogens into the farms

- Heat treatment- kills the pathogens.

- Pruning- creates unfavorable microclimate for some pathogens/minimizes prevent spread of diseases.
- Destroy crop residue- kills the pathogen.
- Control the vectors — helps to slop spread of pathogens.
- Proper plant nutrition — helps plants resist disease attack/ control deficiency diseases.
- Use of appropriate chemicals e.g. fungicides- to kill pathogens

22.c) Transplanting of seedlings.

(7 marks)

- Water nursery thoroughly before transplanting
- Dig the planting holes at appropriate depth
- Select healthy seedlings
- Lift the seedlings carefully with as much soil as possible to avoid root damage/ use a garden trowel
- Transport seedling careful/v to the end field using appropriate means
- Transplant 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

23). a) Study the following information which was extracted from Mr. Rono’s farm record on 31st December 2021 and answer the question below.

Item	kshs
Debts receivable	18,000
Loans payable	300,000
Cows	250,000
Chicken	80,000
Goats	30,000
Debts payable to cooperative	20,000
Buildings and structures	600,000
Wages payable to workers	19,000
Cattle feed in store	10,000
Animal drugs in store	4,000
Breakages to repair	30,000
Cash at hand	20,000
Cash in bank	30,000

Farm equipment	12,000
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Prepare a balance sheet for Rono’s farm using the information above. (10mks)

Mr.Rono’s farm balance sheet as at 31st December 2021					
ASSETS			LIABILITIES		
	Kshs.	Cts			
Fixed Assets			Long term liabilities		
Buildin g and structur es	60,000	00	Loan payable to bank	300,000	
Cows	250,000	00			
Chicken	80,000	00			
Goats	30,000	00			
Farm equipm ent	12,000	00			
Sub total	972,000	00			
Current assets			Current liabilities		
Cattle feeds in store	10,000	00			
Animal drugs in store	4,000	00	Wages to workers	19,000	
Debts receiva ble	18,000	00	Breaka ges and repair	30,000	
Cash at hand	20,000	00			
Cash at bank	30,000	00			
Sub total	82,000	00	Sub total	69,000	
Total Assets	1,054,000		Total liabilities	369,000	
			Net worth/ owner’s equity/ net	685,000	

			capital/ balance		
TOTAL	1,054,000	00	TOTAL	1,054,000	0

23. b) Describe the properties of nitrogenous fertilizers.

(5 marks)

- Highly soluble in soil water therefore should be applied in an already established crop.
 - Have short residual effect, thus should be applied frequently.
 - They have a scorching effect burning effect therefore should not come into contact with the plants.
 - The fertilizers are hygroscopic/absorb moisture from atmosphere therefore it should be stored in dry conditions
 - The fertilizers are corrosive therefore they should not be handled with bare hands/stored in easily corroded containers
 - Are easily leached therefore they should be applied to a vigorously growing crop/already established crop
 - The fertilizers are Volatile therefore they should be applied on moist soils.
- The fertilizers are Volatile therefore they should be applied on moist soils.

23. c) Describe five problems farmers face in marketing of water melon.

(5marks)

- Perishability of produce-farmers incur losses of produce due to extra costs for transportation/storing
- Bulkiness-hence occupy large space or require expensive or heavy transport.
- Transportation- due to poor infrastructure in various farming communities and lack of vehicles, transportation is a big problem.
- Seasonality of produce create storage problems, especially during peak seasons/under or over supply leading to fluctuation of prices.
- Storage is difficult- because of bulkiness/perishability of the produce, large space and special storage facilities are required, which is very costly
- Changes in market demand- there is time lag between decision to produce and actual availability of the product. This makes it difficult

for a farmer to respond immediately to market demand.

- Change in supply- caused by under or overproduction/ competition from cheap imports causing price fluctuation.
- Lack of perfect market Information of market situation-many farmers are ignorant about the prevailing prices of their produce in other parts of the country making selling difficult

24. a) i) Ecological requirements

- Altitude – 900 – 2700m above sea level
- Temperature – cool conditions
- Rainfall – 750-2000mm per annum, well distributed throughout the growing period
- Soils- Deep, fertile, well drained soils.

(Any

2 x 1= 2mks)

ii) Field management practices

- Control weeds by hand; care should be taken not to break the leaves
- Top dressing when cabbages are 20 -25cm in height using one table spoonful of S.A/CAN
- Control pests such as Aphids, cutworms, cabbage saw fly by spraying appropriate pesticide
- Control diseases such as damping off, black rot and downy mildew by use of appropriate fungicide, crop rotation.
- Gapping by replacing the dead/ dry seedlings
- Irrigation to ensure proper growth.

(3 x 1= 3mks)

b) Advantages of using seeds as planting materials

- Seeds are easy to treat against soil borne pests and diseases.
- Seeds are less bulky hence storage is easy
- Easy to handle during planting making operation faster
- When planting seeds, it is easy to use machines like seeds planters and drillers
- Easy to mechanize fertilizers and manures
- Pesticide to apply manures and fertilizers together with seeds during planting
- It is possible to develop new crop varieties due to cross pollination

(1 x 5=

5mks)

24. c) Filtration at water intake

Water is passed through a series of sieves with different meshes to trap large particles

- Softening of water

Soda ash/ sodium bicarbonate is added to soften water

- Coagulation and sedimentation

Alum/ Aluminum sulphate is added to coagulate solid particles

Water stays here for 36 hours to kill bilharzia worms

Aeration of water is done by perforations on top of the tank.

- Filtration II

Water is passed through different layer sizes of gravel and sand on top to remove solid particles left behind.

- Chlorination

Small quantities of chlorine is added to kill microorganisms in water

(stage 1 mark, use 1 mark; 2 x 5 = 10mks)