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FRIENDS SCHOOL KAMUSINGA
AGRICULTURE
PAPER 1
MARKING SCHEME

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FRIENDS SCHOOL KAMUSINGA KCSE TRIAL AND PRACTICE EXAM

AGRICULTURE

PAPER 1 / 443/1

MARKING SCHEME

SECTION A

1. Four major branches of agriculture
   (i) Crop production
   (ii) Livestock production
   (iii) Soil science
   (iv) Agricultural economics
   (v) Agricultural engineering (½ ×4)2mks
2. Effects of low temperature on crop production
   - May slow the rate of growth
   - Can encourage diseases e.g elgon die back in coffee
   - Improves the quality of some crops e.g chemical contention tea and pyrethrum
   - Lowers quality of some crops e.g cotton (½ ×2)1mk
3. Factors influencing soil erosion
   - The amount and intensity of rainfall
   - The slope of the land / topography
   - The type of soil
   - Soil depth
   - Vegetation cover
   - Over stocking
   - Deforestation
   - Planting annual crops on steep slopes
   - Indiscriminate burning of vegetation before cultivation
   - Clean weeding
   - Ploughing up and down the slope (½ ×3=1 ½ mks)
4. Methods of breaking seed dormancy
   - Mechanical breeding
   - Hot water treatment
   - Light burning
   - Chemical method (½ ×2=1mk
5. (a) Types of capital
   - Liquid capital
   - Working capital
   - Fixed/durable capital ½ ×2=1mk

   (b) Sources of capital

   - Savings
   - Credit facilities
   - Grants ½ ×3=1 ½
6. Importance of tissue culture in crop production
   - Fast and requires less space than cultural method
   - Used in mass production of propagules
   - Used to recover and establish pathogen free plants especially in viral disease control.

   ½ ×2=1mk
7. Reasons for carrying out soil testing
   - To estimate the supply of available nutrients

- To determine the alkalinity or acidity of a soil
- To establish the level of organic matter/humus
- To establish water holding capacity/infiltration
- To establish soil texture ½ ×3=1 ½ mks

8. Ways of acquiring land
   (i) Inheritance
   (ii) As a gift
   (iii) Settlement/resettlement by government
   (iv) Buying
   (v) Compensation ½ ×2=1mk
9. Changing the cycle in coffee is the replacement of old bearing stems by suckers 1×1=1mk
10. Problems which farmers encounter in marketing vegetables
    - Perishability-products detenorate in quality
    - Seasonality –products only available in plenty at harvest periods
    - Bulkiness-products weight heavily and occuoy large space
    - Storage –lack of proper storage structures
    - Poor transport system
    - Change in market demand
    - Limited elasticity of demand
    - Lack of market information ½ ×4=2mks
11. Thinning is the removal of extra seedlings form nursery while pricking out is the removal of extra seedling from the nursery and transferring them to a seedling bed. 1×1=1mk
12. (a) Factors which influence the efficiency of pesticides
    - Concentration
    - Timing of application
    - Weather condition at the time of application
    - Persistence ½ ×2mks

    (b) Why is finger millet rarely destroyed in the store
    Because of their small size.
13. List four books of accounts kept by a farmer
    - Ledger
    - Inventory
    - Cash book
    - Journal ½ ×4=2mks

14. Importance of marketing functions
    (i) Packing
    Protects produce against damages theft, adulteration on its way to market
    (ii) Processing
    Transforms produce into a state in which it can be used easily
    To improve the keeping quality
    (iii) Storage
    To avail the produce during periods of scarcity when demand is high
    Prevent produce from damage and theft 1×3=3mks

15. Factors determine the number of times a farmer would harrow his land (1mk)
    - Size of planting materials
    - Slope of the land/topography
    - Moisture content of the soil
    - Condition of the soil after primary cultivation ½ ×2 =1mk
16. Conditions for irrigation

(i) Inadequate rainfall
(ii) In reclaiming arid/semi arid land
(iii) In paddy rice
(iv) In green house

17. Leguminous plants for green manure
They have high nitrogen content

18. Importance of farm accounts (2mks)
- Used in assessment when recurring loans
- Used in making sound management decisions
- Used in determining whether the farm is making profit
- Used to prepare farm budgets
- Used in evaluating assets and liabilities
- Used in assessing the tax chargeable ½ ×4=2mks

19. Period when the demand for labour in the farm is highest e.g planting and harvesting periods. 1×1=1mk

20. (a) Function of each of the following in the preparation of compost manure (1 ½ mks)

(i) <u>Top soil</u>
- Introduces micro-organism necessary for decomposition of the organic materials

(ii) <u>Wood ash</u>
- Improves nutrients to the micro manure

(iii) Manure
- Provide nutrients to the micro-organism

(b) Importance of the stick that is driven into the compost manure heap (PH) during the preparation of compost manure
- Used to check the temperature in the decomposing material 1×1=1mk

<u>SECTION B</u>

21. (a) Pegging/uses of individual hooked pegs
(b) Procedure of (a) above
- Young tea are allowed to grow for one year after transplanting to reach a height of 25-30cm
- The plant is cut back to 15cm above the ground to encourage the development of more branches
- Leave the branches to grow to height of 60-75cm
- Force the branches to grow at an angle of 30-45 by holding each branch with an individual peg measuring 50cmlong
- The tips of the shoots are nipped off to encourage the growth of more shoots 1×4=4mks

(c) Formative prunning

22. (a) Carrot plant
(b) Nantes
Royal chanteney
Imperator
Gold pack 1×2=2mks
(c) Manure application will cause forking of the main root
(d) Qualities of crop A
- Firm
- Fresh in appearance
- Have a smooth skin
- Deep pigmentation

- Well shaped according to variety 1×2=2mks

23.

Units of variable input (Mondays)	Total output	Marginal product	Average product
0	0	0	0
1	6	6	6
2	18	12	9
3	33	15	11
4	40	7	10
5	45	5	9
6	48	3	8
7	48	0	6.9
8	40	-8	5

Marginal products=Extra product above the previous output. For example, the marginal product of 2 units of variable input 13,18-6=12units

Average products = $\frac{\text{total output}}{\text{Unit of variable}}$

½ mark for every correct entry= ½ 12=6mks

(b) Opportunity cost is the returns from the best alternative forgone

(c) The opportunity cost in this case is the value of maize which equals sh 35,000

SECTION C

24. Maize production

(a) Ecological requirement

- Altitude 0-2500m above sea level
- Temperature-Optimum 24^0c.
- Rainfall;-Optimum 600-900mm –which should be well distributed throughout the growing period.
- Soil-deep well drained fertile soils
- Soil PH –Neutral or slightly alkaline 1–5=5mks

(b) Seedbed preparation

- clear the land and remove any stumps
- plough/dig during the dry season and remove all perential weeds.
- harrow the land to a moderate tilth.

(c) Planting

- Plant at the beginning of rains
- Select a suitable maize variety for the area
- Plant seeds at a depth of 2.5 to 10cm depending on the moisture content of the soil
- The spacing should be 75 to 90cm by 23 to 50cm to get the right plant population.
- Place one or two seeds per hole depending on the spacing chosen.
- Plant healthy or certified seeds
- Apply appropriate fertile or well rotten manure the phosphatic fertilizer at the rate of 120kg/ha.
- Plant by hand on small scale/use tractor drawn planters in large scale forms 1×5=5mks

(d) Field management

- Thinning should be done whenever necessary at the height of 15cm.
- Gapping should be done as soon as possible after germination.
- Keep the field free of weeds during early stage.
- Weeding can be done manually or using herbicides.
- Use selective herbicides such as 2,4-D and MCPA against broad leaved weeds.
- Weeds 2 to 3 times if done manually

- Top dress with nitrogenous fertilizers at 45 to 60cm tall/knee height using CAN, ASN,urea or sulphate of Ammonia.
- Remove all tillers/suckers when plants are 15cm tall
- Control pests such as maize stalk borer and every worm using appropriate insecticide
- Uproot and destroy diseased /unhealthy ones/ roughing / use appropriate fungicides to control diseases such as maize smut. 1×5=5mks

e) Harvesting

- Harvesting after 3 ½ -9 months
- Harvesting when the whole plant turns yellow and ears are dry at the right moisture content.(14-28%)
- Harvest by hand if small scale are combine harvests if large scale
- Cut and stock maize if harvesting is done manually
- Remove the maize cobs from the husks by hand. 1×2=2mks

25. Ways of adjusting to risks and uncertainties

(i) Adopting modern methods of production.

These method include tissue culture and embryo transplant

(ii) Flexibility in production methods

Enterprises should be designed in such a way that on their use can be changed without incurring extra costs.

(iii) Input rationing

This controls the quanties of input allocated to different production costs

(iv) Taking insurance cover

It guarantees compensation in case of theft or destruction of property in the farm.

(v) Diversification of enterprises

This is done by setting up several and different enterprizes in order to spread risks.

(1mark for stating ×4=4

(1 mark for explanation ×4=4 total=8mks

(b) Jashi Farm Balance sheet as at 31st March 2011

Assets		Liabilities	
Fixed Assets	Ksh	Long term liabilities	Ksh
Layers	25,000	Bank loan	210,000
Dairy cattle	130,000		
Calves	19,000		
Machinery	85,000		
Buildings	80,000		
Land	180,000		
Total	519,000		
Current Assets		Current Liabilities	
Cash in hand		Farm inputs	20,000
Cash in bank	7,000	Wages	6,200
Cassava in store	25,000	Taxes payable	800
Egg sale on credit	5,000	Loan interest	2,500
Vegetables sale on credit	10,000 5,000 15,000	Total	29,500
Milk sale on credit	57,000	Total Liabilities	239,500
		Net worth/capital Owners equity	

Total	586,000	TOTAL	586,000
TOTAL			

½ A mark for each entry ***½ ×19=9 ½***

½ mark for each total/network ***½ ×5=2 ½***

TOTAL SCORE 12MKS

26. (a) (i) It is property drained.
(ii) It has good water holding capacity
(iii) It has good depth
(iv) It has appropriate PH
(v) It is free from pests and diseases
(vi) It had good structure and texture
(vii) It has high levels of plant nutrients in their suitable proportions. ***5×1=5mks***

(b) (i) Stone lines
- Are stones heaped along contour to trap soil that is being washed away

(ii) Trash lines
- Trash or crop residue are heaped along contour to trap soil before it is washed away.

(iii) Cut-off drains/diversion ditches

- There are channels that divert water run-off from cultivated slopes into areas where it cannot cause erosion.

(iv) Gabious / porous dams
- Are boxes made of wire mesh and filled with stones
- They are built across slopes; dry valley or gullies to trap soil and reduce speed to run –off./trapped soil fills up gully gradually.

(v) Ridging
- Ridging ridges constructed along contours of the field to slow down run-off and trap eroded soil.

(vi) Bunds
- Heaps of soil or earth built on sloping land along contours to trap /stop the water rushing down the hill.

(vii) Dams
- Adam is a wall built across a valley to hold water and thus reduce its speed

(viii) Terraces
- Are constructed on hilly areas by escaveting soil and throwing uphill)fanya juu terrace) or downhill (fanya chini terrace) and hence slow down surface run-off and divert water away from cultivated land.

½ mark mention 1 mark explaining ×8mks total=12mks

c) (i) Herbicides may cause pollution because of their residual effects in the environment
(ii) They require technical knowledge to apply
(iii) There is risk of poisoning to the user or other organisms ***(1×3=3mks)***