KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

STRATHMORE SCHOOL
AGRICULTURE
PAPER 1
MARKING SCHEME

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STRATHMORE SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016

AGRICULTURE

PAPER 1 / 443/1

MARKING SCHEME

1. Importance of taking farm inventory

- Indicator to show what there is or what is lost in the farm √1mk

2. Factors that determine the choice of a crop enterprise

- Environmental conditions
- Capital / resources available
- Size of land
- Type of land tenure system
- Government policies
- Knowledge and skills of the farmer
- Market availability
- Farmers objection

3. 100kg of fertilizer contains 10kg P_2O_5 of fertilizer contains

$$\frac{1000 \times 10}{100} = 100\text{kg } P_2O_5 \surd 2\text{mks}$$

4. Farming practices leading to soil loss

- Ploughing up and down the slope
- Clean weeding
- Overstocking
- Burning of vegetation
- Deforestation
- Planting annual crops on steep land (4 x ½ = 2mks)

5. a) Organic farming is animals and crop production without using chemicals but instead organic materials (plant and animals) remains are used.

b) Conditions that lead to a small scale farming

- No individual has the responsibility of taking care of the land or developing it
- No incentive to manage or develop land
- Poor yields
- Poor stock breeding programme
- Pest and disease control is difficult due to mixing of animals
- Occurrence of soil erosion and land denudation (2 x ½ = 1mk)

6. Factors that contribute to competitive ability of weeds

- Produce many seeds
- Wide stand low soil fertility
- Short life cycle
- Ability to propagate vegetatively
- Seeds remain viable for long period
- Easy seed disease
- Elaborate / extensive root system (4 x ½ = 2mks)

7. a) Causes of blossom end rot disease

- Irregular watering require
- Lack of calcium in soil(3 x ½ = 1 ½ mks)

b) Ways in which pruning helps to control disease in tomatoes

- Avoid spread by removing infected parts
- Open up the canopy avoiding damness

- Discourage pest (vectors) by opening up canopy. (3 x ½ = 1 ½ mks)

8. a) Ways through which minerals can be lost in the soil

- Leaching
- Uptake by minerals
- Vitalization
- Drainage / erosion (4 x ½ = 2mks)

b) Deficiency symptoms in crop production

- Poor root establishment and development
- Stunted growth
- Leaves appear dark green
- Poor tubers development in root crops
- Poor branching / dormancy in lateral buds
- Premature falling of leaves (4 x ½ = 2mks)

9. Reasons for using certified seeds for planting

- Increase crop yields
- Higher resistance to disease and pest attack
- Good adaptation to recommended ecological zones
- Reduced spread of crop pests and diseases (4 x ½ = 2mks)

10. a) Effects of plant diseases on crop production

- Decrease yield when they attack crops
- Lower quality of produce
- Harmful to man and his livestock (poisonous)
- Their control increases cost of production (4 x ½ = 2mks)

b) Maize diseases

- White leaf blight
- Maize streak
- Rust
- Smut

11. Functions of coffee board of Kenya

- Licensing coffee producers and processors
- Carrying out research on all aspects of coffee
- Controlling coffee producers and processors
- Marketing of patchment coffee
- Act as a sole government agent on all matter
- Pertaining International agreement (4 x ½ = 2mks)

12. a) Land reforms is any organized action to improve land tenure system and land use

b) Advantages of land consolidation

- Ensure effective supervision by the farmers
- Saves on time spent in movement
- Good planning
- Rotational programmes can be easily effected
- Mechanization is possible because the areas are large
- Cheaper to register the land
- It saves on farm operations / cost of operation
- Agricultural extension officers can easily inspect the whole farm and give advice
- It encourages the farmer to invest on land / carry out long term projects

13. a) Distinguish between a dam and a weir (1mk)

A dam is a barrier constructed across a river on a dry valley so that it holds water and raise its level to form a reservoir or a lake.

A weir is a barrier constructed across water channels to raise the water level and still allow water to flow over it.

b) Cultural methods used in soil and water conservation

i) Grass strips / filter strips
ii) Growing of cover crops
iii) Making grassed waterways
iv) Practicing contour farming and strip cropping
v) Mulching
vi) Practising afforestation / reafforestation

14. Hybrid seed maize results from crossing two varieties whereas composite seed maize results from crossing of several varieties (2mks)

15. Rogueing is uprooting and destroying of affected crop parts (1mk)

16. Reasons for diversification of farm enterprose

- To spread income throughout the year
- To guard against risk of loss due to drop in prices of one commodity
- To maximize use of farm labour
- Because some enterprises complement one another hence the farmer will benefit

17. Advantages of organic mulch

i) It prevents water evaporation
ii) Acts as an insulator thus modifying the soil temperature
iii) It helps control soil erosion
iv) It controls weeds by suppressing them
v) After decomposition organic mulch add nutrients to the soil thus improving its fertility
vi) Humus produced after the composition of organ mulch improves soil structure and water holding capacity of the soil.

18. a) i) Aerial layering
ii) T – budding
b) i) Rooting medium
ii) Adventitious roots
iii) Lateral bud
iv) Node

19. a) i) Silica
ii) Humus rich soil+
iii) Wire gauge
iv) Tripod stand (4 x ½ = 2mks)

b) Steps followed in carrying out

i) Weigh the silica dish

ii) Collect garden soil from a depth of 20cm
iii) Put the soil in the dish
iv) Place the dish containing the garden soil over a (105^0) in an oven for several hours
v) Cool the soil and weigh
vi) Repeat the process until a constant weight is obtained
vii) Place the dish with the soil over a source of heat
NB: Must be correct procedure
(3mks)

20. a) i) Seed box – Reject nursery (1mk)

ii) Advantages

- It can be taken to a safe place during adverse condition
- It can be transported without damages
- It can be easily sold (3 x ½ = 1 ½mks)

b) i) – Level the surface
- Press the soil firmly
- Watering

ii) – Watering the seedbox four hours before transplanting

- Hardening off
- Using trowels during transplanting to scoop a ball of soil attached to the roots of the plants

(3 x ½ = 1 ½ mks)

21. a) Sprinkler / overhead irrigation (1 x ½ = ½ mk)

b) Advantages

- Even distribution of water
- Less wastage of water
- Practiced in sloppy and even grounds
- Soluble fertilizers can be applied with irrigation water
- Sprinklers can easily be moved from plot to plot (2 x ½ = 1mk)

c) Problems

- Expensive to buy and install
- Encourages fungal diseases e.g. blight in tomatoes
- Causes soil erosion if not properly controlled

22. Field production of tomatoes

i) Ecological requirements of tomato plants

- Rainfall 760 – 1300mm p.a well distributed
- Irrigation in dry areas / dry season
- Attitude 0 – 2100 M a.s.l
- Soil, deep, fertile, well drained, loamy soils
- Temperature 18^0 – 29^0C / warm
- Soil pH 6 – 6.5 (1 x 5 =5mks)

ii) Land preparations

- Early land preparations before on set of rains
- Clear all the vegetation
- Remove tree stumps
- Plough deep / primary cultivation
- Harrow the land to medium tilth
- Prepare planting holes 15cm deep
- Spacing to be 0.9 x 0.6m / 1.0m x 0.5m depending on varieties
- Apply organic manure / tea spoonfuls DSP (1 x 4 = 4mks)

iii) Transplanting

- Done early in the morning or late in the evening
- Water the nursery bed well
- Use a garden trowel to lift the seedlings with a ball of soil around the root
- Select only the healthy and vigorous growing seedlings
- Place each seedling in the planting hole
- Firm / compact the soil around the seedlings
- Mulch the seedlings / shade if necessary
- Water the seedlings (7 x 1 =7mks)

iv) Disease control

- Use appropriate chemical to control disease
- Ensure regular watering to control blossom end rot
- Practice proper field hygiene / rogueing the infected plants
- Plant resistant varieties (4 x 1 = 4mks)

23. a) Factors considered before selecting a farm enterprise

- Land topography / drainage
- Suitability of soil to the enterprise
- Social cultural factors
- Taste / preference of the farmer
- Availability of inputs
- Size of the land available for the enterprise
- The prevailing climate

- Availability of market for the products
- The period enterprise would take to mature
- The current government policy
- The common pests and diseases which may hinder the enterprise when implemented
- Availability of capital
- Land tenure system
- Profit margin in relation to price fluctuation

(Award 1mk x 10 correct answers = 10mks)

b) Profit and loss a/c of Kilimo farm for the year 31st December 2004

Purchase and expenses		Sales and receipts	
	Ksh		Shs
Opening valuations	50,000√	Maize	20,000√
Seed and fertilizer	2,500√	Milk	40,000
Disc plough	80,000√	Debt recoverable / ploughing	8,000
Final	5,000√	Closing valuations	80,000
Poultry seeds	4,500√		
Cattle drugs	2,000√		
TOTAL	144,000√		
Profit	4,000√		
148,000			148,000

Award 1 mark for correct: title, purchase and sales, correct total: 1 x 3 = 3 marks

Award ½ mark for any correct entry ½ x 10 = 5mks

24. a) Factors considered in choice of suitable implements for primary land preparations

- Conditions of land
- Presence of obstacles on the land e.g. rocks, stones stumps, roots etc
- Conditions of the soil e.g. soft or hard
- Presence of certain weeds / vegetation covers like coach grass
- Source of power available e.g. animals power, hand power of tractor power
- The scale of operations / size of land / large scale production versus small scale production
- Capital availability of the implement
- Type of crop to be grown
- Topography / slope of the land (10 x 1= 10mks)

b) Establishment of grass pasture on already ploughed land upto when the pasture is ready for grazing

- Time the secondary preparation to be done during the dry season / before rains
- Harrow the farm to a fine tilth
- Produce a weedfree seedbed / clean seedbed
- Firm the seedbed using rollers
- Select a desirable / suitable variety grass for your ecological zone
- Plant seeds at the onset of rains / before rains / early planting
- Apply phosphatic fertilizers at the rate of 200 – 300kg ssp/ha
- Broadcast the seeds evenly
- Use the recommended seedrate for your variety e.g. 1.5 – 2.0 kg / ha of P.G.S or 5 – 10kg /ha of non P.G.S
- Drag a, twig of gunny bag to cover the seeds lightly
- Control weeds by uprooting or using suitable herbicides
- Control weeds by uprooting or using suitable herbicides

- Top dress with nitrogenous fertilizers 6 weeks after germination in split application
- Avoid grazing when the pasture is too young
- Allow first grazing 4 – 6 months after proper establishment (10 x 1= 10mks)