AGRICULTURE MARKING SCHEME
PAPER 1
FORM IV
JULY 2018
TIME 2HRS

SECTION A (30 MARKS)

1. What is plantation farming system (1 x1 = 1mk)

- This is a system of farming in which one crop is grown in large scale

2. State two effects of high level of education and technology on agricultural production (2 x ½ = 1mK)

- Provide skill required in carrying out production practices
- Provide knowledge required in proper method of production
- Lead to positive change in carrying out production practices
- Lead to positive change in attitude involving practices and consumer preference

3. Name two ways in which soil Ph is raised (2 x ½ = 1mk)

- Liming/application of lime
- Application of a basic/alkaline fertilizer eg basic slag

4. State two means by which water is conveyed on farms (2 x ½ = 1mk)

- piping/ use of pipe
- Use of channels
- use of containers

5. Give four factors that affect the quality of farm yard manure (4 x ½ =2mks)

- Type of animal used
- Type of feed eaten
- Type of litter used
- Age of farm yard manure
- Method of storage
- Species of animals from which the manures is obtained

6. Mention two conditions under which the opportunity cost is zero (2 x ½ = 1mk)

- Where there are no alternatives enterprises to choose from/competitions for resources available
- When the resources are free/unlimited
- If there is no choice

7. List any three methods which can be used to detect nutrient deficiency in crops (3 x ½ 1 ½ mks)

-soil analysis/testing
- Plant tissue analysis
- observing deficiency symptoms

8. State four reasons for processing agricultural produce (4 x ½ =2mks)
- Enhance/ increase the keeping quality
- Reduce bulkiness
- Improve the quality of the produce
- Improve market value
- Improve its utility

9. Give four factors considered when grading tomatoes for fresh market (4 x ½ = 2mks)
- Degree of ripeness
- Size
- Damage by pest and diseases
- Shape of fruits

10. State four reasons why rough lemon is preferred as a root stock in the grafting of citrus
- -drought resistant (4 x ½ = 2mks)
- Resistant to soil borne pests and diseases/greening disease
- Adaptable to water logging and salinity
- Compatible with most scions

11. Highlight four objectives of land settlement which have been undertaken in Kenya (4 x ½ =2mks)
- To settle the landless
- To ease population pressure
- to increase agricultural production
- To improve people's standard of living

12. Mention four types of soil erosion by water (2mks)
- Splash/raindrop erosion

- sheet erosion
- Gulley erosion
- Rill erosion

13. Name two insect pests that attack sorghum in the field (1mk)
    - Sorghum shot fly
    - Stem borer
14. Give two benefits of possessing a land title deed to a farmer (2 x ½ = 1mk)
    - Can be used to secure audit facilities loan
    - Enough security of tenure
    - Encourage the farers to invest on long term
    - Enable the land owner to lease part of whole
15. List four variable costs in coffee production (4 x ½ = 2mks)
    - Casual labour cost
    - Fertilizer and manure cost
    - Cost of chemicals
    - Cost of repairs of machinery
    - Cost of hiring machinery
    - Cost of fuel
16. Outline four financial documents (4 x ½ = 2mks)
    - Receipt
    - Involve
    - Statement
    - Purchase order
    - Delivery note

17. State four reasons why timely weed control is advisable in crop production (4 x 1/2=2mks)
    - Prevent weeds from stabling in the field
    - Prevent allelopathic effects of weeds
    - Reduce the cost of production
    - Reduce multiplication and spread of the weeds
    - Reduce spread of pest and diseases for which the weed act as alternate hosts
    - Reduce competition between weed and the crops
    - Avoid contamination of crop
    - Prevent injury to farmer/livestock
18. Distinguish between oversowing and undersowing as used in crop production (1x1=1mk)
    - Over sowing refers to introduction of a pasture in an existing grass pasture while under sowing refers to establishment of pasture under a nurse crop such as maize or sorghum

      (mark as whole)

19. Give three ways in which forage crops are classified (3 x ½ = 1 ½ mks)

- According to pasture stand
- According to pasture establishment
- According to ecological zones/attitudes

b) What is intensive hedgerow as used in agro forestry? (1 x 1=1mk)

- A method of cropping where rows of trees/ shrubs are planted between rows of crops

SECTION B (20MKS)

20. i)What is the experiment above designed to study (1mk)

- Capillarity/capillarity action

ii) Name the three soil types (3 x ½ = 1 ½ mks)

A – Sandy soil

B- loam soil

C – clay soil

iii) State the characteristic texture of soil types (2 x 1=1 mk)

A- rough/coarse/gritty

B- Fine / smooth/soft

iv) Give three ways a farmer would improve the structure of soil type C (3 x ½ = 1 ½ mks)

- Liming
- Planting of tree e.g Eucalyptus
- Drainage
- Application of organic manure

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i) Identify the pests D and E (2 x ½ = 1mk)

D- Cutworm

E – Maize stalk borer

ii) State two damages caused by pest E to a crop of maize (2 x 1=2mks)

- Eats leaves and reduce photosynthetic area
- Bore holes on maize crops reducing yields
- Burrow tunnels in the stems (growing tips destroy transport system

iii) Give two cultural practices carried out to control the pest in E (2 x 1 =2mks)

- Timely planting
- Crop rotation
- Close season
- field hygiene

22. Identify the parts labeled A1 and A2 (2 x ½ = 1mk)

A1 – root stock

A2- scion

a. State the methods of propagation illustrated in diagrams A3 and B (2 x1=2mks)

A3 – grafting

B – Trench layering

b. Name two other methods of A3 (2 x 1 = 2mks)

- Patch
- Side
- Notch
- Bark

23.

i) Calculate the marginal rate of substitution and give values for (4 x ½ = 2mks)

V = $\frac{48-39}{2-1}$ = 9

W= $\frac{32-27}{4-3}$ = 5

X = $\frac{23-21}{6-5}$ = 2

Y = $\frac{20-19}{8-7}$ = -1

ii) Calculate the Elasticity of demand. (Show your working) (1x2= 2mks)

Ed = $\frac{\Delta Q}{\Delta P}$ x $\frac{p}{Q}$

= $\frac{20-22}{2000-1800}$x $\frac{2000}{20}$ = 1

iii) State the type of elasticity of demand in (ii) above (1 x 1 = 1mk)

- Unitary Elasticity

SECTION C (40MARKS)

24A. Describe the field production of Napier grass under the following sub headings

i) Planting (any 4 x 1 =4mks)

- Plant at the onset of the rains/early planting
- Select desirable Napier grass variety for the ecological area
- Use healthy planting materials
- Use cuttings / canes of splits for planting
- Cutting/ canes should have 3-5 nodes
- Select cuttings from mature canes /stems
- Place planting materials in the furrow/holes
- Cover the materials with soil to appropriate depth

ii) Fertilizer and manure application (any 3 x 1=3mks)

- Apply phosphate fertilizer at planting time
- Apply farm yard manure/compost manure before planting
- Rate of organic manure should be 7 -10 tonnes per hectare
- Apply organic manure after harvest and dig it into the soil every year
- Top dress with nitrogenous and potasic fertilizers 6 -8 weeks after planting

iii) Utilization (3 x1 = 3mks)

- Cut and feed to ruminants
- Defoliate/cut at the right stage of growth 3-5 months old when stems are 1-1.5 high
- Cut the stems at 2.5 – 5 cm above the ground surface
- Use a sharp panga for cutting
- Conserve excess as silage
- Chop Napier grass into small pieces
- It can be dried and used as mulch

b) Describe qualities of a mother plant which should be considered when selecting vegetative materials for planting

- High yielding
- Resistant to pests/diseases
- High quality produce
- High rooting ability
- Early maturing

(Well explained points = 5 x 1 = 5mks)

c) Describe advantages of tillage as a method of weed control

- Cheap hence good for small scale farmers
- Earthing up is done during tillage and thus encourage root growth
- Incorporate crop residue into the soil
- Open up soil hence allow water infiltration
- Improves soil aeration for proper plant growth (5 x 1 = 5mks)

25a. Describe various agencies involved in marketing agricultural products

- Itinerant traders or middlemen – buy goods from farmers
- Processors or manufacturers – buy produce to process
- Broker or commission agents – act on behalf of other businessmen agents for a fee or commission
- Co-operative societies and unions – buy farmers produce locally
- Marketing boards – promote production and marketing of agriculture produce
- Retailers – sell to consumers in small quantities (5 x 1 = 5mks)

b) Explain five factors that influence soil productivity

- Good supply of crop nutrients
- God depth
- Well aerated
- Good drainage
- Abundance of useful soil micro-organisms
- Adequate water retention
- Collect soil ph
- Free from plant pests and diseases causing organisms
- Free from obnoxious weeds and witch weeds

Stating and explanation 5 x1 – 5mks

c) Describe the procedure followed when transplanting tree seedlings from a bare root nursery bed

- prepare planting hole prior to transplanting
- separate top soil from sub soil as you dig the hole
- mix the top soil with manure and refill the hole half way
- water the seedlings properly a day before transplanting
- carefully lift the seedlings using a garden trowel and place it at the centre of the planting hole
- refill the hole with the soil
- firm gently around the seedling until the hole is completely filed

- water the seedling
- provide a temporary shade
- transplant at the right stage (10 x 1 = 10mks)

26a. Explain factors that should be considered when selecting seeds for planting

- Adaptability - seeds should be adapted to different ecological conditions
- Physical deformities/damage, should be free from physical damages
- Health – should be free from pests and diseases
- Viability/germination percentage- should have a high germination percentage
- Purity – should be pure at maturing stage
- Age/storage period - stored for low period have low viability/germination percentage hence should be selected 10 x 1 = 10mks

b. Describe the procedure of harvesting pyrethrum (4 x1 =4mks)

- Pick only flowers having horizontal petals with two or three rows of slick florets
- Pick flowers selectively
- Pick flowers at interval of 14-21 days
- Flowers are picked by twisting the heads
- Picking depends on the weather conditions,and the soil conditions

4 x 1 = 4mks

c. Describe six advantages of minimum tillage

- To reduce the cost of cultivation/ploughing reduce the number of operations
- Control soil erosion – use of mulch and cover crops reduce chances of soil erosion
- Maintain soil structure – continuous cultivation destroys soil structure
- Conserve moisture – soil moisture is conserved when open tillage is avoided
- Prevent the disturbances of roots and underground structures
- Prevent exposure of humus to adverse conditions 6 x 1 = 6mks