AGRICULTURE 443/1 PAPER 1 MARKING SCHEME

SECTION A (30 MARKS)

ANSWER ALL QUESTIONS IN THIS SECTION IN THE SPACES PROVIDED

1. Outline **four** reasons why Kenyans should be encouraged to carry out agro forestry (2mks)
   i. Source of income
   ii. Source of wood fuel
   iii. Environmental benefit
   iv. Aesthetic valued/beauty
   v. Remedy to deforestation
   vi. Labour saving (4 x ½ = 2mks)
2. Outline **four** observable indicators of economic development of nation (2mks)
   i. Improved infrastructure
   ii. High per capita income
   iii. Increased recreational facilities
   iv. More and better social amenities
   v. Better and efficient production methods /improved technology [4x ½ = 2mks]
3. State **four** features that should be considered when choosing pipes for use on the farm (2mks)
   i. Colour
   ii. Size/diameter
   iii. Strength
   iv. Durability (4 x ½ = 2mks)
4. State **four** soil factors that should be considered when selecting a crop to grow in an area (2mks)
   i. Soil drainage
   ii. Soil aeration
   iii. Soil PH
   iv. Soil depth
   v. Soil nutrients (4 x ½ = 2mks)
5. State **four** disadvantages of planting sorghum using broadcasting method of planting (2mks)
   i. More seeds are used
   ii. Difficult to mechanize
   iii. Difficult to establish correct plant population
   iv. Competition for nutrients, light and water
   v. Lack of uniformity in land coverage ((4 x ½ = 2mks))
   vi. Difficult to carry out subsequent operations
6. Give **four** reasons why farmers do not prefer to use green manure (2mks)
   i. Green manure crops are food crops
   ii. Manure crop may exhaust soil moisture at the expense of the main crop
   iii. Decomposition may take long
   iv. Nutrients are used by micro-organism to decompose the green manure ((4 x ½ = 2mks)
7. State **four** practices that should be carried out to ensure maximum use of a nitrogenous fertilizer in a crop field (2mks)

i. Control soil erosion
ii. Remove weeds
iii. Apply fertilizer in moist soil
iv. Apply at correct stage of crop growth
v. Apply correct amount of fertilizer (4 x ½ = 2mks)
vi. Apply fertilizer in splits

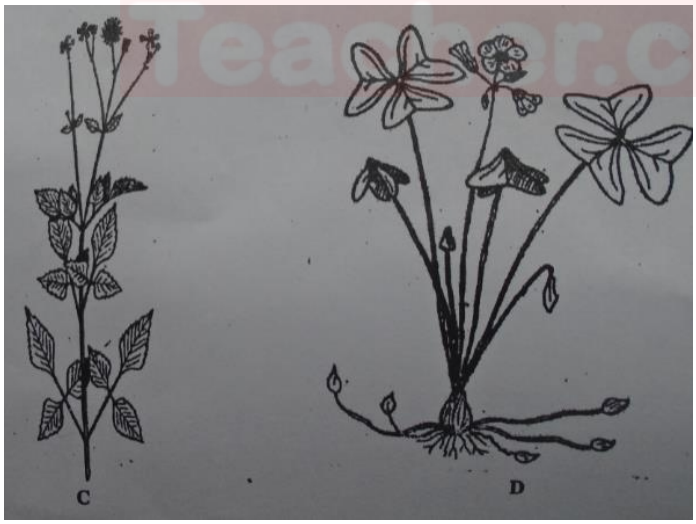
8. Give **four** examples of variable inputs in dairy production (2mks)
   i. Feeds
   ii. Drugs
   iii. Replacement stock
   iv. Packing materials
   v. Veterinary services (4 x ½ = 2mks)
   vi. Casual labour
9. State **four** roles of additives in silage making (2mks)
   i. Increase palatability
   ii. Increase nutrient content
   iii. Increase carbohydrate content for proper fermentation (4 x ½ = 2mks)
   iv. Discourage growth of undesirable micro-organism preventing decomposition
10. Give **four** factors that influence spacing when planting a pure stand of maize (2mks)
    i. Intended use of the crop
    ii. Type of machinery to use for subsequent operation
    iii. Soil fertility
    iv. Soil moisture content
    v. Number of seeds per hole
    vi. Pest control (4 x ½ = 2mks)
11. Give **four** examples of places of information contained in a sales receipt when selling milk (2mks)
    i. Date
    ii. Quantity of milk
    iii. Price of milk
    iv. Buyer of milk
    v. Name of the farmer/farm
    vi. Serial number
    vii. Mode of payment (4 x ½ = 2mks)
12. Name **three** disadvantages of multiple stem pruning over single stem pruning (1 ½ mks)
    i. Breaking of stems and branches
    ii. Difficult in gathering the berries from top points
    iii. Rotting of stumps with age
    iv. Difficult in spraying tall branches (4 x ½ = 2mks)
13. Name **three** sources of ground water on the farm (1 ½ mks)
    i. Wells
    ii. Springs

iii. Boreholes (3 x ½ mk)

14. State **four** disadvantages of using synthetic material during mulching (2mks)
    i. Fire risk
    ii. Expensive
    iii. Trap light showers of rainfall
    iv. Provide breeding ground for pest (4 x ½ = 2mks)
15. Give **two** reasons for carrying out each of the following operations in land preparation
    i. Rolling …….. (1mk)
        i. increase seed- soil contact
        ii. compact soil to protect it against agents of erosion
        iii. crushes soil clods (2x ½ =1mks)
    ii. Leveling …. (1mk)
        i. Ensure uniform depth of planting
        ii. Ensure uniform water level in paddy rice fields
        iii. To remove depressions which collect water leading to rotting of seeds (2 x ½ = 1mrks)
16. State **two** reasons for processing farm produce before selling.(1mk)
    i. Reduce bulkiness of the produce lowering transport and storage costs
    ii. To make the produce more valuable and useful
    iii. To improve the keeping quality (2 x1/2 = 1mk)

SECTION B (20 MARKS)

17. The diagrams below shows weeds C and D

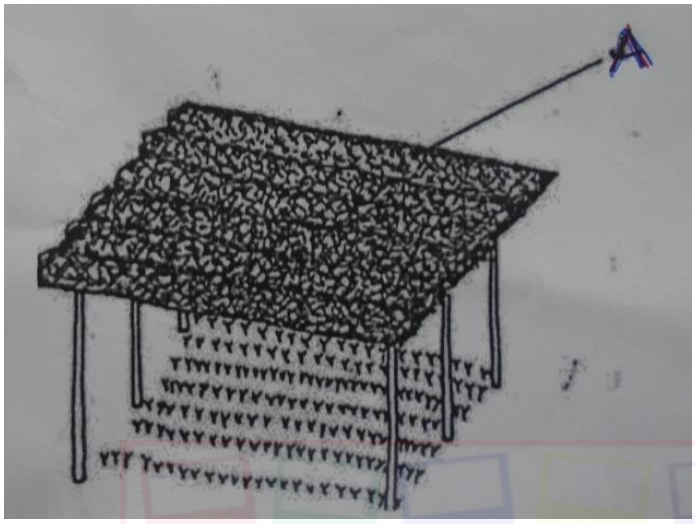


    i. Identify weed
    C ……black jack/*bidens pilosa* ……. (1mk)
    D ……oxalis/ *oxalis latifolia*……. (1mk)
    ii. Using features on the diagrams above, give one reason why it is difficult to control
        i. Weed C …many seeds…… (1x1 = 1mk)
    iii. Name **one** systemic herbicide which can be used to control weed labeled D (1mk)
        i. Atrazine
        ii. Bentzon

iii. 2, 4 – D
iv. Linuron (1x1 = 1mk)

iv. At what stage of growth of maize should weeds be controlled using post emergence herbicides (1mk)
i. 10-15 cm high
ii. 2-4 weeks after emergence (1x1 = 1mk)

18. The diagram below illustrates a farm practice. Use it to answers questions that follow

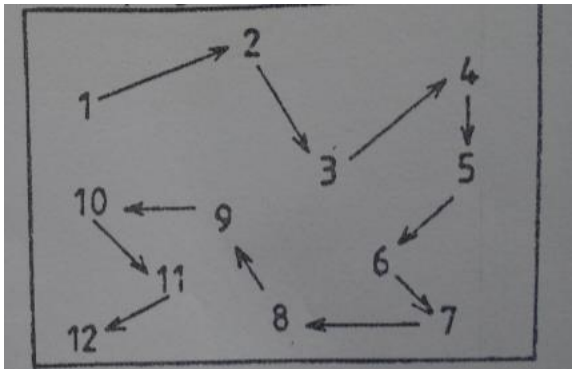


i. Identify the structure illustrated above (1mk)
i. Nursery bed

ii. State **two** functions of the part labeled A (2mks)
i. Reduce the intensity of rainfall drops
ii. Lower the rate of evapo-transpiration
iii. Protect seedlings from harsh conditions eg strong winds (2x1 = 2mks)

iii. State **two** ways how seedlings are hardened off in the structure illustrated above (2mks)
i. Gradual removal of shade
ii. Gradual reduction of watering (2x1 = 2mks)

19. The diagram below shows a soil sampling method



i. Identify the method (1mk)

i. Zigzag 1x1 = 1mk)

ii. State **two** precautions a farmers should take during sampling (2mks)
   i. Avoid unusual sites
   ii. Avoid contamination (2x1 = 2mks)

iii. Give the information the soil sample should have before being taken to the laboratory for testing (2mks)
   i. Name and address of farm/farmer
   ii. Field/plot number
   iii. Date of sampling (2x1 = 2mks)

20. A farmer has a piece of land on which he can grows wheat, tomatoes and ground nuts

Crop	Yield	Selling price (Sh/Kg)
Wheat	8,000	25
Tomatoes	5,600	55
Ground nut	6,000	60

i. Which crop should the farmer grow? Show your working (2mks)
Wheat 8000 x 25 = 200,000 √ ½ mk
Tomatoes 5,600 x 55 = 308, 000 √ ½ mk
Ground nuts 6,000 x 60 = 360,000 √ ½ mk
The farmer should grow ground nuts √ ½ mk

ii. (i) State the farmer's opportunity cost (1mk)
   i. Value of tomatoes = sh 308, 000 (1x1 = 1mk)
(ii) Give a reason for your answer in (b) (i) above (1mk)
It's the best alternative foregone (1x1 = 1mk)

iii. Give a reason why farmers have to make a choice on the enterprise to implement on the farm (1mk)
Available resources are limited while the possible enterprises are unlimited (1x1 = 1mk)

SECTION C (40 MARKS)

Answer any two questions from this section

21. (a) Explain **five** precautions that should be observed during harvesting of pyrethrum (5mks)
   i. Picking starts at 3-4 months to maintain quality
   ii. Picked flowers are put in woven baskets to allow ventilation and avoid fermentation of flowers
   iii. Wet flowers should not be picked because they heat up and ferment
   iv. Picked flowers should not be compacted to avoid heating up and fermenting
   v. Maintain a suitable picking interval of 14-21 days to avoid picking overblown flowers
   vi. Breaking the flower stalks to maintain quality (5x1 = 5mks)

(b) Describe **five** factors that characterize small scale farming (5mks)
   i. Small size of land

ii. Simple tools
iii. Limited capital
iv. Less labour is required
v. Maximum use of available labour (5x1 = 5mks)

(c) Describe **four** reasons why farmers should prefer dams to weirs (4mks)

i. Water level is regulated
ii. Controls flooding
iii. Store large volume of water
iv. Can be used to generate H.E.P (4x1 = 4mks)

(d) Explain **six** types of land tenure systems practiced in Kenya (6mks)

i. Leasehold/landlordism/tenancy: gives legal right to a tenant to use land at a payment for a specific period of time
ii. Company/concession: A company and government enter into an agreement on the use of land for a specific period of time
iii. Communal: the whole community has the right to the use of the land
iv. Individual owner operator: Land is owned by an individual who operates it
v. State/government ownership: Government controls land use
vi. Co-operative use: Land is owned by group of members who operate it on co-operative basis (6x1=6mks)

22. (a) State and explain **five** ways how biotic factors influence crop production (5mks)

i. Nitrogen fixing bacteria: Convert atmospheric nitrogen to nitrate for plant use
ii. Predators: control pest
iii. Pollinators : transfer pollen grains from anther to the stigma
iv. Decomposer: breakdown organic remains to release nutrients
v. Pest: spread disease to crops/eat plant parts
vi. Pathogen: cause crop diseases
vii. Weed: compete for nutrients with crops (5x1 = 5mks)

(b) Describe **five** benefits of using vegetative materials in production of avocados (5mks)

i. Leads to development of early maturing crop
ii. Development of high yielding avocado crop
iii. Makes the plant assume the desired shape and size
iv. Can obtain two or more avocado varieties on the same root stock
v. Ensure maintenance of genetic uniformity
vi. Facilitates development of drought resistant crop
vii. Facilitates faster multiplication of the desired crop
viii. Is used to repair damaged parts of avocado trees (5x1=5mks)

(c) Describe **five** ways in which grass cover helps in soil and water conservation (5mks)

i. Reduces the speed of runoff which lowers the erosive power of run-off
ii. Reduces the impacts of rain drops which reduces splash erosion
iii. Holds soil particles together from being carried away by erosive agents
iv. Improve soil structure
v. Improve infiltration rate of water into the soil
vi. Reduces the rate of evaporation of soil moisture
vii. Filters soil hence conserving the soil (5x1 = 5mks)

(d) Describe **five** methods of controlling anthracnose in bean production (5mks)

i. Use of healthy seeds
ii. Crop rotation
iii. Close season
iv. Use resistant varieties
v. Field hygiene
vi. Rogueing
vii. Use of appropriate fungicides (5x1 = 5mks)

23. (a) Describe **five cultural** methods of pest control in crop production (5mks)

i. Timely planting
ii. Timely harvesting
iii. Proper tillage
iv. Close season
v. Trap cropping
vi. Crop rotation
vii. Field hygiene
viii. Crop nutrition
ix. Rogueing (5x1 = 5mks)

(b) Explain **five** management practices carried out on pastures in the fields (5mks)

i. Weeding: should be timely. Can be done through slashing, uprooting.
ii. Application of selective herbicides.
iii. Top dressing: should be done at the onset of rains to increase herbage yield
iv. Topping: done to remove the stemy fibrous materials to stimulate fresh growth
v. Reseeding: done to fill gaps to increase production.
vi. Controlled grazing: done through paddocking, tethering and strip grazing
vii. Pest control: pests such as moles should be controlled to avoid pasture damage. (5x1=5mks)

(c) Explain why farmers should diversify their enterprises on the farm (5mks)

i. Spread income throughout the year
ii. Guard against total loss due to failure of one enterprise
iii. Guard against total loss due to drop in prices of one product
iv. Maximize use of farm labour
v. Some enterprises complement each other (5x1 = 5mks)

(d) Describe field management practices carried in onion production. (5mks)

i. Thinning to reduce competition
ii. Weeding should be done carefully not to damage shallow roots
iii. Remove excess soil from the root region to encourage bulb expansion
iv. Top dressing using nitrogenous fertilizer,
v. Spray using an appropriate pesticides to control pests
vi. Spray using appropriate fungicides to control fungal diseases.
vii. Irrigate during dry season (5x1 = 5mks)