**MARKING SCHEME MOMALICHE JOINT MOCKS APRIL 2023**

**AGRICULTURE PAPER 443/1**

**SECTION A(30MARKS)**

**1. Advantages of intensive systems of farming.**

i) maximum utilization of land

ii) High yield due to high level of management

iii) Better quality of products

iv) Possible in density populated area 4 x ½ = 2mks

**2. Conditions that facilitates land fragmentation**

i) Shifting cultivation

ii) Inheritance of pieces of land that are scattered

iii) Government allocation of land to people who own land else where.

iv) Buying pieces of land in different areas. 4 x ½ = 2mks

**3. a) Post harvesting practices**

i) Threshing

ii) winnowing

iii) drying

iv) Sorting and grading

v) dusting

vi) packaging

vii) processing

***marks first four points 4 x ½ =2 mks***

b) **Earthing up** – it’s the placement of soil in form of a heap around the base of the plants. (1mk)

**4. Reasons why burning as a method of bush clearing is not recommended.**

i) Destruction of soil structure.

ii) Death of useful soil organisms

iii) Loss of soil nutrients

iv) Destruction of organic matter/humus

v) Raise of soil pH due to release of potash

vi) soil moisture is lost

vii) Exposes the soil to the agents of erosion

***Mark first four points*4 x ½ = 2mks**

**5. a) Forms in which the following elements are available to plants.**

i) Nitrogen – nitrate ions ( NO-3) or Ammonium ( NH+4)**1mk**

ii) Sulphur – sulphate ion ( SO2-4)**1mk**

**b) The liming elements in crop production**

i) Magnesium

ii) calcium

iii) sulphur ***marks first two points 2 x ½ = 1mk***

**6. Effects of ill – health and HIV/AIDs in agricultural production**

i) Shortage of farm labour

ii) low food supply and poverty in general

iii) Low living standards leading to despondency, hopelessness and lack

of motivation.

iv) Government and NGO’s using a lot of time and resources in controlling the pedamic

v) Increasing the cost of living of AIDs patients and their relatives.

***Mark first four points4 x ½ = 2mks***

**7. Functions of the followings in compost heap.**

i) **Ash**  -improves the level of potassium and phosphorous and

raise soil pH which enhances microbial activities.

ii) **Garden soil** – introduces micro – organisms that are necessary for the

decomposition of organic materials.

iii) **Organic manure** – provides the nutrients to micro – organisms.

iv) **stick**– checking the temperatures within the heap.

4 x ½ = 2mks

**8. Factors enhancing rooting in stem cuttings.**

i) High soil temperature rej. Temperature alone.

ii) Good soil aeration rej. Aeration alone.

iii) Low light intensity in hard woods and high light intensity in soft wood rej. Light intensity alone.

iv) High relative humidity rej. Humidity alone

v) userootings hormones rej. Hormones alone

***Mark first fourspoints 4 x ½ = 2mks***

**9. Reasons why a farmer should have breeding record in livestock production.**

i) They assists in the planning of a good breeding programme.

ii) They help in the selection of breeding stock.

iii) They help in culling un productive animals that have fertility problems.

1. They are useful in determining services pregnancy diagnosis and parturition dates.
2. They help in culling un productive animals that have fertility problems.
3. They are useful in determining services, pregnancy diagnosis and parturition dates.
4. They assist in predicting the performance of offspring in pedigree selection.

***Mark first four points 4 x ½ = 2mks***

**10. Ways of treating water for use in the farm.**

i) Chemical treatment

ii) filtration

iii) boiling

iv) Aeration ***4 x ½ = 2mks***

**11**. Methods of harvesting water in the farm

i) Weirs

ii) Dams

iii) Ponds

iv) Roof catchment

***Mark first four points 4 x ½ = 2mks***

**12. Method of conserving forage**

i) hay

ii) silage

iii) Standing forage***marks first two points 2 x ½ = 1mk***

**13. Farming activities that encourage soil erosion**

i) Monocropping

ii) overstocking

iii) Planting of annual crops, steep slopes

iv) clean weeding

vii) Continous cropping***Mark first four points 4 x ½ = 2mks***

i) Carrying out agricultural projects in school.

ii) Participating in ASK shows.

iii) Participating in agricultural exchange programmes.

iv) organizing agricultural fields days.

v) Organizes and participates in the annual young farmers club of Kenya

symposiums and rallies.

***Marks first four points4 x ½ = 2mks***

**14. Role of agriculture in national development.**

* Promotion of industrial development
* Food supply
* Source of income
* Creation of employment
* Infrastructural improvement
* Enhancing international relationships
* Improving the balance of payments

***Marks first four points 4 x ½ = 2mks***

15. Advantages of budding

i) Budding produces seedless fruits.

ii) They produces plants that are identical to the mother plants.

iii) They are less thorny

iv) They produces shorter tree varieties, hence easy to harvest.

v) They mature early compared to crops propagated by seedlings.

***Mark first four points 4 x ½ = 2mks***

**SECTION B (20MARKS)**

**16. a) Aim of the experiment**

To show the presence of living organisms in the soil.**1 x 1 = 1mk**

**b) Observation made by the students in the two flasks at the end of experiment.**

i) Flasks 1 – the time water turns milky/white precipitates.1 x 1 = 1mk

ii) Flasks 2 – The lime water remained clear.1 x 1 = 1mk

**c) Reasons for observation in flask 1**

carbon (iv) oxide produced by living organism in the soil turned the lime water milky. The carbon (iv) oxide was produced during respiration.1 x 1 = 1mk

**17. a) Identify the method of propagation illustrated**

- Tissue culture 1 x 1 = 1mk

b) The common crop propagated through the method

- Banana 1 x 1 = 1mk

**c) Disadvantages of the methods of propagation.**

* Requires high level of sanitation/hygiene
* Certain crops cannot be propagated by the method

**18. a) Identify the pest**

Weaver bird 1 x 1 = 1mk

b) Damages caused by pest to crops

1. It eats the grains
2. It causes the grains to fall off
3. It exposes maize cobs to rain, causing them to rots.

***Mark first two points 2 x 1 = 2mks***

**c) Methods of controlling the pest**

1. Trapping them
2. Killing them using a catapult
3. Scaring them away
4. Destroying their breeding sites

***Mark first two points2 x 1 = 2mks***

19. a) 1ha = 1 hectare = 10,000M2

Crop spacing given = 2.7M x 2.7M

Plant population = Area of land give ½ mk

Crops spacing

= 10,000M2 =10,000M2 = 1,371.7 give ½ mk

2.7 x 2.7 7.29M2

= 1371 or 1372 plants give ½ mks

***Maximum score = 2mks***

**b) reasons for correct spacing.**

1. High yields are obtained
2. Reduces incidences of pest and diseases.
3. Crops produces are of high quality
4. Give maximum utilization of provided resources.

***Marks first three points 3 x 1 = 3mks***

**SECTION C (40MARKS)**

1. **a) State four benefits of sowing annual crops early. (4mks)**

-Enables the crop to withstand competition from weeds.

-Enables the crop to escape attack by pests and diseases.

-To better utilization of nutrients in the soil.

-For better utilization of available rainfall.

-To get good market.

-To reduce competition for labour.

-To time harvesting to occur during appropriate weather conditions.

**b) Describe eight effects of fragmentation and sub division of land. (8mks)**

-Time is wasted while travelling from one holding to another or from the farmstead to the various fragments.

-Proper and effective control of weeds and pests become difficult since the fragments are surrounded by other farmers’ holdings.

-It is difficult to allow a sound farm plan arising from the distribution between fragments and the farmers’ home.

-It is difficult to supervise the scattered plots.

-Control of livestock parasites and diseases will become difficult.

-It is difficult to carryout various soil conservation measures especially without the cooperation and concerted efforts from all the farmers.

-The size and shape of such holdings may be such that it is virtually impossible for the farmers to restrict grazing in one holding only.

-There are difficulties of offering agricultural extension advice.

-Agricultural productivity remains poor resulting in low standards of living.

**c) Explain eight effects of weeds. (8mks)**

-They compete with crops for nutrients, space, and light and soil moisture hence reducing crop yields.

-Some eg witch weed (Strigasp) are parasitic to cultivated crops eg maize.

-Some weed seeds lower the quality of agricultural produce. Some get attached to sheep wool lowering its quality.

-Some weeds are poisonous to man and livestock egDaturastramonium.

-Some weeds act as alternate hosts for insect pests and others for diseases eg wild oats is an alternate host for rust.

-Some weeds are allelopathicie produce poisonous substances that may suppress the growth or germination of cultivated plants

-Some block irrigation channels.

-Aquatic weeds affect fishing.

-Weeds lower the quality of pastures eg Lantana camara

-Some weeds are difficult to handle and control because they irritate the workers hence reducing the efficiency in which they are controlled eg stinging nettle and devils horsewhip.

1. **a) Describe the various field management practices for tomatoes. (8mks)**

-Gapping-Any seedlings that dries after transplanting should be gapped to maintain the correct plant population.

-Top dressing-At 25-30cm high tomato plants should be top dressed with nitrogenous fertilizers at the rate of 100kg CAN or SA per ha.

-Weeding-The field should be kept weed free. Hand cultivation is done to control weeds. Care must be taken not to injure tomato roots and stems during weeding.

-Staking-This is the practice of supporting tomatoes especially tall varieties using sticks which are about 2m high.

-Pruning-This encourages the development of large fruits and controls upward growth.

-Tomato pestseg American bollworm are controlled using appropriate pesticides to improve quality of fruits.

-Tomato diseases like tomato blight, bacterial wilt and blossom-end rot should be controlled using the appropriate ways.

-Mulching to conserve moisture and smother weeds.

-Watering early in the morning and late in the evening during dry weather conditions.

(Any eight practices well described)

**b) State the precautions that should be observed when harvesting cotton. (4mks)**

-Picking should be done immediately the bolls open/split to prevent staining by dust.

-Picking should be done when the lint is dry to prevent fibres from sticking together.

-Use clean containers for picking to avoid contamination.

-Hands should be clean to avoid staining of the lint.

-Do not mix cotton with foreign matter eg leaves and small twigs.

-Use separate containers for separate cotton grades to ensure quality.

-Avoid using sisal bags for collecting the bolls because their fibres may mix with the seed cotton thus creating problems during ginning. (Any four)

**c) Explain four importance of crop rotation. (8mks)**

-Maximum utilization of nutrients- Alternating shallow with deep rooted crops ensures that nutrients from different layers are well utilized.

-Control of soil borne pests and disease build up- Eg root eelworms in pyrethrum. Pests and diseases are specific to various crops.

-Control of weeds -Parasitic weeds eg witch weed (Striga weed) are susceptible to grass family crops and can be controlled by planting non grass crops for some time.

-Improvement of soil fertility-When leguminous crops are included in the rotation programme, they help in fixing nitrogen with the help of Rhizobium bacteria. This nitrogen is made available for subsequent crops.

-Improvement of soil structure- It is recommended that at the end of the rotation programme a grass ley be established. The roots of grass are so extensive that they bind soil particles together.

-Control of soil erosion-If crops planted in rows eg maize is alternated with cover crops eg sweet potatoes.

1. **a) Explain four factors to consider in choosing the type of irrigation to use in the farm.**

**(8mks)**

-Capital availability- Putting up irrigation structures requires money.

-Topography of the land- For flood irrigation the land ought to be level enough. Furrow irrigation is only possible on gentle sloping land.

-Water availability-If water is limited; drip irrigation will be preferred offer sprinkler irrigation.

-Type of soil- Heavy soils such as clayey is suitable for furrow irrigation.

-Type of crop to be irrigated- For rice growing basin irrigation is preferred over sprinkler irrigation.

**b) Explain five farming practices that destroy soil structure. (5mks)**

-Over cultivation which leads to pulverization of soil ie breaking soil into fine particles.

-Use of heavy machinery to cultivate soil.

-Cultivation at the wrong time such as when soils are too wet or too dry.

-Deforestation exposes soil to erosion hence destruction of soil structure.

-Overstocking/overgrazing exposes soil to erosion hence destruction of soil structure.

-Burning of vegetation-Destroys organic matter leading to the destruction of soil structure.

-Monocropping/ monoculture- This is the practice of growing one type of crop in a farm or one piece of land without alternating which may lead to destruction of soil structure.

(Any five

**c) Describe seven reasons why farmers need to keep good farm records. (7mks)**

-They help a farmer in planning and making decisions in the farm.

-Help to compare the performance of different enterprises within a farm or other farms.

-Show the history of the farm.

-Guide a farmer in planning and budgeting of farm operations.

-Help to detect losses or theft on the farm.

-Help in the assessment of income tax to avoid over or under taxation.

-Help to determine the value of the farm or to determine the assets and liabilities of the farm.

-Makes it easy to share the profits and losses in partnership.

-Helps in settling disputes among heirs eg if a farmer dies without a will.

-Helps to show whether the farm business is making profits or losses.

-Provides information to help determine a farmer’s credit worthiness.

-Helps in supporting insurance claims on death, theft and fire of farm assets.

-Provide labour information like terminal benefits eg NSSF dues.

**(any seven)**