**443/1**

**AGRICULTURE PAPER 1 – MARKING SCHEME**

**TRIAL 1 - SEPTEMBER 2022**

**SECTION A (30 MARKS)**

***Answer All the Questions in This Section in the Spaces Provided***

1. State **four** farming activities that may improve soil structure. (2 marks)

* Mulching
* Intercropping
* Minimum tillage.
* Fallow cropping.
* Organic faming
* Agroforestry
* Cover cropping

1. Name **three** types of legume trees used as fodder. (1½ marks)

* *Leucaenea leucocephala*
* *Sesbania sesban*
* *Calliandia callothyrsus*

1. State **three** effects of low temperature on crop production. (1½ marks)

* Reduces rate of growth
* Lowers quality of crops like pyrethrum.
* Lowers quality of fruits e.g. citrus, pineapple.
* Increases incidence of fungal diseases.

1. Give **three** reasons for drying grains to 21% moisture content after harvesting. (2 marks)

* Prevent sprouting while in store. – prevent attack by Aflatoxin fungi
* Reduce incidence of attack by boring pest.
* Prevent rotting.

1. State **four** parameters of national economic development. (2 marks)

* National income
* Per capita income
* Literacy level
* Gender parity
* Level of technology
* Quality of life

1. Outline **two** conditions that favors nomadic pastoralism in Kenya. (2 marks)

* Presence of large tracks of grassland
* Communal land ownership
* Large size of household herds
* Large size of household land

1. State **three** factors that determine the depth of planting seeds. (1½ marks)
2. Size of the seeds
3. Type of soil
4. Amount of soil moisture
5. Type of germination.
6. State **three** factors that will determine the selectivity of herbicide in chemical weed control. (1 ½ mark)

* Stage of growth of the plant.
* Plant morphology.
* Plant anatomy
* Mode of action of herbicide.
* Weather condition.
* Herbicide formulation.

1. Outline **four** factors that affect the quality of farmyard manure. (2 marks)

* Type of animal used.
* Type of food eaten.
* Type of litter used
* Method of storage.
* Age of farmyard.

1. Name **three** basic concepts of economics (1½ marks)

* Scarcity
* Preference and choice
* Opportunity cost.

1. State **four** importance of tissue culture. (2 marks)

* Mass production of propagules.
* Establish pathogen free plants.
* Establish fast.
* Requires less space.

1. Give **two** methods used to drain farmland. (1 mark)

* Open ditches
* Underground drain pipes.
* French drains.
* Cambered beds.
* Pumping.
* Planting trees.

1. State **four** factors to consider when designing a sound farm plan. (2 marks)

* Size of the farm
* Farmer’s objectives and preferences
* Environmental factors
* Security
* Government policy
* Market conditions
* Availability of inputs.

1. Nam **four** improper farming methods that increase the rate of soil erosion. (2 marks)

* Ploughing up and down the hill.
* Continuous cropping.
* Growing annual crops in steep areas.
* Clean weeding.
* Deforestation.
* Burning of vegetation
* Overstocking.

1. Outline **four** pieces of information contained in a land title deed. (2 marks)

* Date of registration
* Number of title deed.
* Size of the land.
* Condition of ownership if any.
* Type of ownership.
* Seal and signature of issuing officer.

1. Differentiate between a nursery bed and a seedbed. (1 mark)

* **Nursery bed** is a special type of seedbed prepared to raise seedlings before transplanting while **seedbed** is a piece of land which has been prepared ready to receive planting materials.

1. Name **three** macro nutrients whose deficiency symptoms is chlorosis. (1½ marks)

* Nitrogen
* Magnesium
* Sulphur
* Potassium

1. Define Agriculture. (½ mark)

* **Agriculture** is the art and science of crops and livestock production.

1. Give **two** reasons for sub soiling (1 mark)

* To facilitate drainage.
* Bring up leached nutrients to the surface.
* Increase aeration of soil.
* Improve root penetration.

**SECTION B (20 MARKS)**

***Answer All the Questions in the Spaces Provided***

1. After soil sampling and testing a farmer was advised to apply 200kg of nitrogen per hectare in his 2 hectare farm. If the farmer has only diammonium phosphate (D.A.P) 18:46:0 at his disposal;
2. Calculate the amount of D.A.P he would require (1½ marks)

***100kg of D.A.P contains 18kg of Nitrogen***

***Xkg of D.A.P X 200kg of Nitrogen (½ mark)***

***X = 200 X100 X 2 ha (½ mk)***

***18***

= ***2222.2kg of D.A.P (½ mark)***

1. Calculate the amount of P205 he will have applied per hectare. (1½ marks)

***100kg of D.A.P contains 46kg of P2 O5***

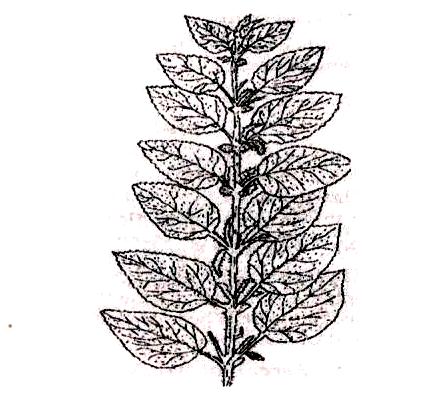
***1111.1kg of D.A.P contains X of P2 O5 (½ mark)***

***1,111.1 kg DAPx 46kgP2O5 ( ½ )***

***100kg DAP***

= 511kg P2O5

1. State **two** symptoms the farmer would have observed on the maize crops if he applied excess nitrogen. (2 marks)
   * Scorching of the leaves.
   * Wreak stem/lodging of the crop
   * Delayed flowering/maturity.
   * Excessive foliage.
2. The diagram below shows a common weed plant.



1. Identify the weed - ***Stinging nettle/urtica massaica*** (1 mark)
2. Why is it difficult to eradicate the above weed? (1 mark)

* It irritates the workers thus reducing the efficiency in which they are controlled.
* They have underground horizontal root stems (Rhizomes)

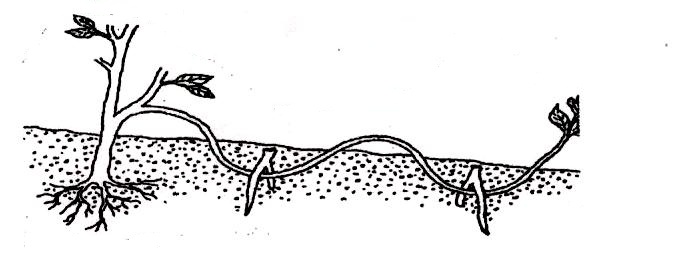
1. Name **two** biological weed control methods. (2 marks)

* Use of livestock/ goats to graze and control the growth of weeds in plantation crops e.g. coconuts and cashew nuts.
* Use of certain weed eating fish to control aquatic weeds.
* Use of moths to control cactus.

1. Name **one** economic importance of the above weed. (1 mark)

* Increases cost f production.
* Has medicinal value
* Used as vegetable

1. The diagram below show a method of crop propagation. Study it and answer the question that follows:



1. Identify the method. (1 mark)

* Compound layering /serpentive layering.

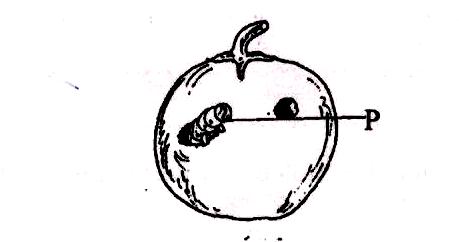
1. State **one** advantage of the above method over the other methods of crop propagation. (2 marks)

* More than one planting materials can be obtained from one branch.

1. State **three**  factors which influence the rooting of cutting in vegetable propagation (3 marks)

* Relative humidity
* Temperature
* Oxygen supply
* Light.
* Chemicals e.g. hormones

1. The diagram below shows a tomato fruit affected by a pest. Study it carefully then answer the questions that follow.



1. Identify the pest labeled P. (1 mark)

* American bollworm.

1. State **two** methods used to control the pest. (2 marks)

* Chemical method.
* Early planting
* Rogueing.
* Trap-cropping

1. State any **two** factors to consider when selecting tomato fruits for marketing. (2 marks)

* Degree of ripening
* Colour
* Size
* Shape
* Wholesomeness
* Whether processing or fres market variety.

**SECTION C (40 MARKS)**

***Answer Any Two Questions From This Section In The Spaces Provided.***

1. (a) Outline the various uses of water in a mixed farm. (10 marks)

* Used for irrigation.
* Watering livestock.
* Domestic use
* Processing farm produce.
* Rearing aquatic organisms such as fish.
* Recreational purposes
* Building and construction.
* Washing farm tools and equipment.
* Cooling engines.
* Generating electricity.
* Driving machines such as water pumps (hydram).

(b) Describe **five** methods of draining water from a marshy land. (10 marks)

* Use of open ditches; channels are dug in the field, excess water from the adjacent soil drains into the ditch/ channels and then into a water way/river.
* Use of cambered beds; these are raised beds with a trench on either side, excess water drains from the raised soil into the trenches.
* Pumping; excess water is lifted using a mechanical force (pump) into a water way/river.
* Planting trees that use a lot of water; those absorb the excess water and loose it into the atmosphere.
* Use of French drains; these are ditches filled with stones then covered with soil, excess water drains from the soil into the ditch. Crops can be grown on top of the ditches.
* Use of porous pipes; these are put in the soil slanting towards a river, excess water drains from the soil into the pipe through the perforations.

1. (a) Describe **five** field management practices carried out in tomatoes production. (10 marks)
2. Pests and disease control using appropriate methods.
3. Irrigation during the dry periods, morning and evening.
4. Control weeds timely and appropriately.
5. Regular pruning.
6. Gapping;
7. apply nitrogenous fertilizer at the right stage and amount.
8. Staking; provide support to tall varieties using appropriate methods.

(b) Describe **five** cultural practices used in soil and water conservation (10 marks)

* Grass strips; these are strips of land along the contours planted with grass.
* Cover cropping; practice of growing crop that provide ample soil cover.
* Contour farming; this is where all farming practices are done along the contours.
* Strip cropping; this is where strips of crops with poor soil cover are alternated with those of crops with good soil cover.
* Mulching; this is the practice of placing organic/inorganic materials on the soil surface.
* Planting of trees; practice of planting trees in deforested areas or where they never existed.

1. (a) Explain **five** factors that would influence the spacing of a particular crop in the field. (10 marks)

* Number of seeds per whole; the higher the number the wider the spacing.
* Soil moisture content; the higher the soil moisture content the closer the spacing.
* Growth habit of the crop; spreading varieties require wider spacing compared to non-spreading varieties.
* Level of soil nutrients; the higher the level of soil nutrients, the closer the spacing.
* Machinery to be used; in case machines are to be used in subsequent operations, wider spacing is advisable.
* Intended use of the crop; crops grown for human food requires wider spacing than for other uses.

(b) Describe **five** practices that a farmer should carry out to ensure uniform germination of seeds (5 marks)

* Pre-germinating the seeds.
* Leveling the seedbed.
* Uniform depth of planting.
* Use of certified seeds/proper seed selection.
* Uniform irrigation.

(c) State **five** factors that determine the stages of harvesting crops. (5 marks)

* Purpose of the crop.
* Concentration of required chemicals.
* Moisture content of the crop.
* Prevailing weather conditions.
* Market demand of the crop.