**443/1**

**AGRICULTURE PAPER 1 – MARKING SCHEME**

**MARCH/APRIL, 2023.**

**SECTION A (30 MARKS)**

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

1. (i) Predator

(ii) Decomposer

(iii) Pollinators

(iv) Nitrogen fixing bacteria (½ X 2 = 1 mark)

1. (i) It makes it easy to control pests.

(ii) Fruits are not contaminated by soil.

(iii) Easy to harvest.

(iv) Pruning is easy.

(v) Easy to weed (4 X ½ = 2 marks)

1. (i) Grazing

(ii) Cut and given as green fodder.

(iii) Making silage (2 X ½ = 1 mark)

1. (i) Volume of heap/materials in pit goes down.

(ii) Materials easily breaks to small pieces when pressed between fingers.

(iii) Growth of moulds/fungi in manure.

(iv) Temperature within the material goes down.

(v) Materials are odourless.

(vi) Turns dark brown in colour. (4 X ½ = 2 marks)

1. (i) Apply mulch to control weeds.

(ii) Using herbicides to control weeds.

(iii) Growing cover crops to control weeds.

(iv) Heavy harrowing followed by planting.

(v) Timing cultivation/late weeding followed by planting.

(vi) Slashing/uprooting weeds.

(vii) Restricting cultivation to root zone of crop. (4 X ½ = 2 marks)

1. (i) To obtain seeds which provide high quality yields.

(ii) To obtain seeds with high germination percentage.

(iii) To reduce chances of disease and pest attack/ obtain healthy seeds.

(iv) To identify seeds that are suitable to a given ecological area. (4 X ½ = 2 marks)

1. (i) Used when selecting animals for breeding.

(ii) Used in planning and budgeting.

(iii) Used when culling animals.

(iv) To control breeding. (4 X ½ = 2 marks)

1. (i) Practice where land is plenty.

(ii) Practicable with annual crops not with perennials.

(iii) Agricultural output is low.

(iv) Inputs like pesticides and fungicides are rarely used.

(v) Population is sparse.

(vi) Use of simple tools. (2 X ½ = 1 mark)

1. (i) Type of machinery.

(ii) Soil fertility.

(iii) Size of the plant.

(iv) Moisture availability.

(v) Use of the crop.

(vi) Pest and disease control. (4 X ½ = 2 marks)

1. Olericulture involves growing of vegetables while pomoculture is the growing of fruits.

(1 X 1 = 1 marks – marks as a whole)

1. (i) Large tracks of land.

(ii) Heavy capital investment.

(iii) Skilled labour.

(iv) High level of management. (2 X ½ = 1 mark)

1. (i) Establishment of ownership.

(ii) Measurement of land.

(iii) Description of land.

(iv) Recording of land. (4 X ½ = 2 marks)

1. (i) Wind

(ii) Moving water rej. Water only

(iii) Moving ice rej. Ice only.

(iv) Temperature (2 X ½ = 1 mark)

**SECTION B**

1. (a) Sorghum (1 X 1 = 1 mark)

(b) G – Loose smut; Head smut (1 X 1 = 1 mark)

 H – Leaf blight; Anthracnose; Sooty stripe

(c) Variety – Goose neck. (1 X 1 = 1 mark)

(d) (i) Growing of improved resistant varieties /Use of resistant varieties.

 (ii) Seed dressing.

 (iii) Timely planting. (1 X 1 = 1 mark)

1. (a) (i) Calcium. (1 X 1 = 1 mark)

(ii) Nitrogen (1 X 1 = 1 mark)

(iii) Potassium (1 X 1 = 1 mark)

(iv) Phosphorous (1 X 1 = 1 mark)

 (b) Earthing up; (1 X 1 = 1 mark)

 Ridging.

1. (a) G – Oxalis (1 X 1 = 1 mark)

H – Mexigan Marigold (1 X 1 = 1 mark)

 (b) (i) It taints milk if consumed by lactating cow.

 (ii) It competes with crops for water and nutrients thus reducing their yield.

 (iii) It increases cost of production in controlling it. (1 X 1 = 1 mark)

 (c) It has underground bulbs/tubers which make it survive in adverse conditions (1 X 1 = 1 mark)

 (d) 2, 4 – D

 MCP (1 X 1 = 1 mark)

1. (a) Bench terrace (1 X 1 = 1 mark)

(b) - When high value crops are grown

 - When there is an acute shortage of suitable land. (2 X 1 = 2 marks)

(c) - Broad based terraces.

 - Narrow based terraces.

 - Fanya juu terraces.

 - Fanya chini

 - Level terrace (2 X 1 = 2 marks)

**SECTION C**

1. (a) Production ot tomatoes
2. Transplanting
* The nursery should be watered before lifting the seedlings.
* Healthy and vigorous growing seedling is planted per hole and soil firmed around the seedling.
* Seedlings are mulched and watered regularly.
* Plant same height as it were in the nursery bed.
* Apply phosphate fertilizer at planting.
* Uproot seedlings when they have 4 – 5 leaves /penal thickness / 10 – 15cm high.
* Lift seedlings using garden trowel.

(5 X 1 = 5 marks)

1. Field management practices.
* Gapping – Any seedling that dries after transplanting should be gapped /replaced 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.
* Staking – practice of supporting tomatoes especially tall varieties using sticks which are about 2m high.
* Pruning – practice of removing of many shoots growing from the main stem to remain with two or three. In tall varieties terminal buds are removed when plant reaches 1.5-1.8m high. This encourages the development of large fruits and control upward growth. (5 X 1 = 5 marks)

(b) Advantages of drip irrigation

1. Economical in the use of water.
2. Water under low pressure can be used.
3. Minimizes the outbreak of leaf fungal diseases.
4. Reduces growth of weeds between the rows.
5. Fertilizers may be applied with water.
6. Suitable for both sloppy and flat land.
7. Minimize water loss through evaporation.
8. Accumulation of salts around plant is avoided. (6 X 1 = 6 marks)

(c) Precautions a farmer should consider when harvesting cotton.

* Do not pick when it is wet.
* Avoid any contamination.
* Pick on weekly basis.
* Sisal bags should not be used. (4 X 1 = 4 marks)
1. (a) Ways through which vegetation cover reduces soil erosion.
* Reduces impact of rain drops and speed of wind lowering erosive power.
* Roots hold soil particles together thus preventing from being eroded easily.
* Vegetation cover on decaying act as a cementing agent of the soil.
* Promotes water infiltration rather than surface run-off.

(4 X 1 = 4 marks)

(b) Conditions that necessitate land clearing.

* When opening up a virgin land.
* Where a stalk growing crop was previously planted.
* Where the interval between primary and secondary cultivation is long.
* Where land was left fallow for a long time.

(c) Benefits of planting annual crops early.

* Early establishment lead to withstanding competition with weeds.
* There is use of available rainfall.
* Crop escape attacks by pests and diseases.
* There is better use of nitrogen like nitrogen flush before it is leached.
* Crops get good market prices/sell early when supply is low.
* Reduces competition for labour with other operations/give time for other practices. (6 X 1 = 6 marks)

(d) Practices carried out in vegetable nursery.

* Shading to protect seedlings against strong sunlight and heavy raindrops.
* Weed control to avoid competition for nutrients.
* Pest and disease control.
* Thinning /pricking out to avoid overcrowding and unnecessary competition for nutrients.
* Mulching before seeds germinate to conserve moisture and seeds being eaten by birds.
* Hardening off seedlings to avoid transplanting shock. (6 X 1 = 6 marks)
1. (a)) Cultural methods of controlling diseases.
* Growing diseases resistant varieties.
* Heat treatment of planting materials against diseases.
* Proper drying of cereals and pulses before storage.
* Practicing field hygiene /to remove or destroy pathogen infested materials.
* Proper spacing of crops.
* Use of healthy planting materials /use of disease free planting materials.
* Control of weeds which may harbor pathogens.
* Proper seedbed preparation.
* Crop rotation.
* Closed season. (8 X 1 = 8 marks)

(b) Three ways in which biotic factors discourage agricultural production.

* Pathogens – cause diseases in crops and livestock reducing productivity.
* Pests – damage crops directly or indirectly reducing production.
* Parasites – cause weakening of animals, transmit diseases reducing production.
* Denitrifying bacteria – break down nitrates in the soil reducing fertility.

(6 X 1 = 6 marks)

 (c) Effects of high temperature in crop production.

* Increases incidences of pests and diseases.
* Improves quality of certain crops.
* Lowers quality of some crops e.g. pyrethrum.
* Increases rate of evapotranspiration/wilting in plants.
* Increases growth rate for early maturity in crops. (First 3 X 1 = 3 marks)

(d) Five ways of maintaining soil fertility.

* Application of manures and fertilizers to replenish soil nutrients.
* Mulching to conserve soil moisture.
* Control of soil PH to maintain it within the required range.
* Maintaining good drainage.
* Weed control to avoid competition for nutrients.
* Practicing minimum tillage to maintain good soil structure.
* Intercropping coffee with low growing legumes for nitrogen fixation.

(5 X 1 = 5 marks)