**AGRICULTURE FORM THREE PAPER 1 2023**

**SECTION A (30 MARKS)**

***Answer ALL the questions in this section in the spaces provided***

1. **Outline three reasons for treating water for use in the farm ( 1 ½ mks)**

- To kill disease causing micro-organism

- To remove chemical or impurities

- To remove bad smell and taste

- To remove sediments

1. **Give four advantages of carrying out minimum tillage (2mks)**

* To reduce cost of cultivation
* To control soil erosion
* To consume soil moisture
* To maintain soil structure

1. **State four disadvantages of communal land tenure system (2mks)**

* No incentive among the users to conserve the land
* There is tendency to overstock and well graze
* Problems in controlling livestock breeding programs
* Impossible to secure loans by no title deed
* There are diseases and parasites

1. **Name any four surface sources of water in the farm (2kms)**

* Dam
* Weir
* River
* Swamp
* lake

1. **State four important reasons of keeping farm records in the farm…….(2mks)**

* It shows the history of the farm
* It shows whether the farm is making profit or loss
* It shows assets and liabilities
* Used when supporting insurance claims
* Used in planning or budgeting
* Used when sharing profits
* When settling disputes

1. **Give two ways in which organic mulch helps in the control of soil erosion (1mk)**

* It reduces the speed of the surface run-off
* I helps in intercepting the rain drops
* It assists in increasing the rate of infiltration

1. **Name any two examples of farm structures that are used in crop production (1mk)**

* Nursery bed
* Silos
* Stores
* Green houses

1. **Give two reasons for siting a nursery bed at a well sheltered place (1mk)**

* To prevent high rate of evaporation
* To prevent strong winds

1. **State four reasons as to why burning is not recommended in land (2mks)**

* Destroys organic matter
* Destroys soil nutrients
* Kills soil living organisms
* Leads to loss of soil water

1. **Give four advantages of using certified seeds during during planting…… (2mks)**

* Give high yields
* They all germinate
* They give products of high quality
* They are free from diseases
* They have high germination percentage.

1. **Why is it necessary to allow freshly cut sorghum (Columbus grass) to wilt before**

**feeding it to livestock? (1mk)**

* to prevent poisoning by prussic acid

1. **Give two roles of nitrogen in maize production (1mk)**

* Increases size of grains
* Helps to increase carbohydrate content

1. **Distinguish between the terms hybrid and composite as used in maize breeding**

**( 1mk)**

* Hybrid- they are crops varieties developed by crossing two pure lines
* Composites- these are maize varieties developed through repeated mass section

1. **Outline three important aspects of rainfall a farmer should consider when growing crops (1 ½ mks)**

* Rainfall reliability
* Rainfall distribution
* Rainfall intensity
* Rainfall amount

1. **State two harmful effects of strong wind in agricultural production (1mk)**

* Cause soil erosion
* Destruction of farm structures
* Cause lodging of cereals

1. **Give two ways in which cover crops help to conserve water in the soil (1mk)**

* Increase the rate of infiltration
* Prevent evaporation
* Prevent surface runoff

1. **Give a reason for carrying out each of the following management practices on a tree nursery** 
   1. **Pricking out (1 mk)**

To prevent overcrowding in the nursery

* 1. **Shading(1mk)**

**Prevents splash erosion**

**Prevents excessive evapotranspiration**

**Prevents direct sunlight which leads to excessive evaporation**

**18) Outline two ways of controlling damping off disease off disease of cabbages**

* Removing shade
* Reducing the amount of water

1. **State four effects of pests with both piercing and sucking mouth parts on**

**Crops (2mks)**

* Suck all the photosynthesized food substances
* Leading to distortion of leaves

1. **Name four natural factors that may influence soil erosion (2mks)**

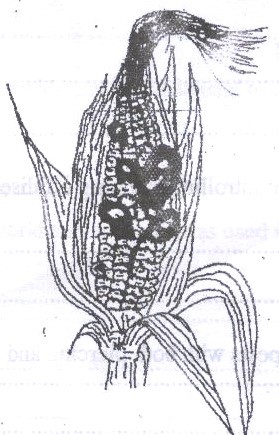
* Topography or gradient of slope
* Rainfall intensity
* Soil depth
* Soil type
* Vegetation cover

1. **Opportunity cost – value of the best foregone alternative**

**SECTION B ( 20 MARKS)**

***Answer ALL the questions in this section in the spaces provided***

1. **The diagram below illustrates a maize cob attacked by a disease. Study it carefully and answer the questions that follow.**

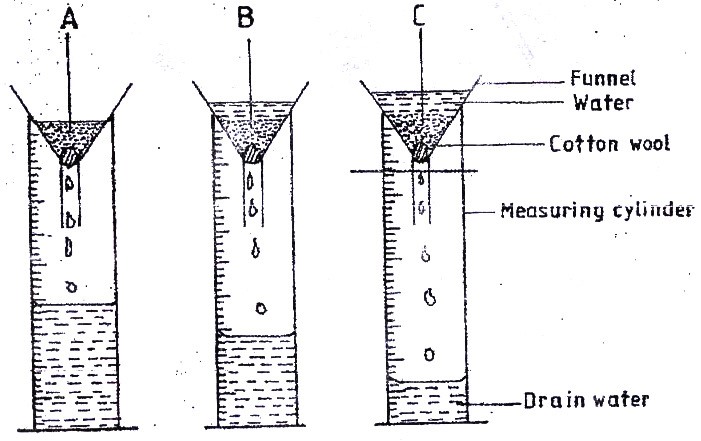
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* 1. **Identify the disease - ( 1 mk)**

- Maize smut

* 1. **Apart from maize, give two other crops that may be attacked by the disease (1mk)**
* Sorghum
* Wheat
* Oats
* Millet
* Barley
* sugercane
  1. **State two methods of controlling the diseases (2mks)**
* Useof copper sulphate
* Planting resistant crop varieties
* Crop rotation
* Planting certified seeds

1. **The diagram below illustrates an experiment on soil. Study it carefully and answer the questions that follow**

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**State the aim of the experiment ( 1mk)**

* To experiment the rate of infiltration or water holding capacity of the soil

**If the volume of water illustrated in the measuring cylinders was observed after one hour, identify the soil samples labeled A and B.**

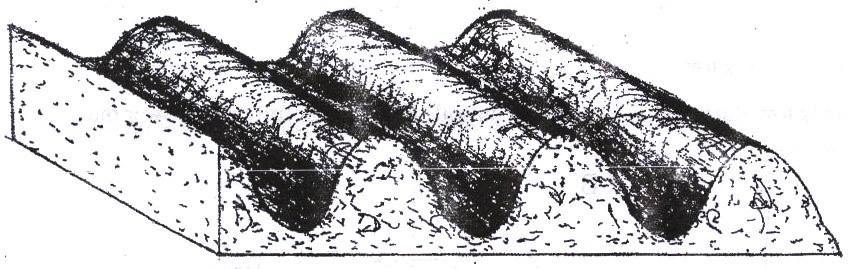
1. Sandy soils **( ½ mk)**
2. Loamy soils  **( ½ mk)**

**State two ways in which the soil structure of the soil sample labeled C above**

**can be improved. ( 2mks)**

* adding organic manures
* liming
* sub soiling to break hand pan
* draining excess water

1. **The diagram below illustrates a final seedbed after tertiary operation done during land preparation. Study it carefully and answer the questions that follow.**

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* 1. **Name the tertiary operation carried out on the seedback ( ½ mk)**

Ridging

* 1. **Describe how the tertiary operation named in (a) above is carried out**
* Soil is dug in a continuous line to form a ridge. A furrow is made and soil is helped on the side to form a ridge**. ( 1 ½ mks)** 
  1. **Give two advantages of planting crops on the final seed back illustrated above ( 2 mks)**

-promotes tube expansion

-Conserves water

-Controls soil erosion

-Easy harvesting

1. **What is the function of each of the following substances in the preparation of compost manure?**

**(a) Wood ash ( 1mk)**

-promotes the amount of phosphorus and potassium in the manure

- Helps to modify soil ph

**b ) Top Soil ( 1 mk)**

* Introduces soil micro-organism which initiates the decomposition process

c) **wooden stick** – used to check temperature in the compost heap**( 1 mk)**

d) **manure**- acts as food for the microorganisms**( 1 mk)**

1. **Outline four deficiency symptoms of nitrogen in plants. (4mks)**

* Chlorosis of leaves or yellowing of leaves
* Stunted growth
* Premature leaf fall
* Production of purple pigment
* Soughing of leaves

**(any ½ x4= 2marks)**

1. **(a) Why is the use of the following items essential during the harvesting of tea?** 
   * 1. **Plucking stick ( 1 mk)**

It helps to maintain a uniform plucking table

* + 1. **Woven basket ( 1 mk)**

Prevents decomposition of the leaves

**SECTION:C (4O marks)**

**Answer any two questions in this section**

1. **(a) Explain five advantages of vegetative propagation in crop production ( 5 mks)**

* Plants grow faster
* Facilitates propagation of seedless plants
* Crops show uniformity in terms of qualities
* Crops have desirable shape or size
* Produce many different types of fruits on one plant
  + 1. **Outline five benefits of organic farming ( 5 mks)**
* It’s cheap and cost effective
* It makes use of the locally available materials
* It’s useful in improving soil structure
* There is no side effects from crops and animal products.
* It doesn’t pollute the environment
  + 1. **Discuss five factors to consider when choosing the type of irrigation system to**

**use in a farm. ( 10mks)**

* Topography of the area
* Soil type
* The type of crop to be grown
* Water availability
* Type of water
* Capital availability

**(any 1 x 5)**

**(29a ) Describe ten safety precautions that should be taken when using herbicides to**

**control weeds (10mks)**

* Read manufacturers instructions
* Avoid drift to unintended crops and pasture
* Never suck the blocked nozzles
* Wear correct attire
* Wash the knapsack sprayer properly after use
* Keep containers with chemicals out of reach from children
* Do not eat while spaying
* Dispose chemical containers properly
* Avoid spraying in the direction of wind
* Give crop enough time before harvesting sprayed crops
* Avoid washing equipments in water sources

1. **b ) Biological agents of weathering (10 mks)**

**large animals:**

* Large animals like buffaloes elephant, cattle, when they move, they exert pressure on rocks breaking them.

**Man’s activities**

* Mans activities such as mining, building of house, construction of roads and rails leading to breaking of rock into small pieces.

**Plants roots**

* Plants roots make their way into rocks cracks and cravicesleading to further breakages.
* Plant roots produce weak acids which weaken the rock making it to break .

**Arthropods**

* Insects such as earthworms, termites help in soil formation.

**Micro-organism (saprophytes)**

* These feed on death organisms plants and animals leading to decay and formation of organic matter which is a component of soil.

**(2x4=8)**

1. **Describe tomato production under the following sub headings**
2. **Nursery establishment (6mks)**

* Select a site crops of tomato family have not been grown for the last one year.
* Clear the vegetation and remove all trash using a suitable tool.
* Then dig the site/area deeply in order to remove all the weeds.
* Measure and divide the nursery into beds of 1m wide and any convenient length.
* Leave a path of about 50 cm apart.
* Level the bed ensuring that it is of the right tilth.
* Broad cast phosphatic fertilizer
* Make shallow drills about 1cm deep and 10 – 15 cm apart.
* Put tomato seeds in those drills
* Apply light mulch
* Water

**(1x6 = 6mks mark until procedure breaks)**

1. **Land preparation (3mks)**

* Dig the land deeply removing all the perennial weeds.
* Dig the planting holes the recommended spacing
* Apply DAP/ in the planting holes.

**(1x3=3marks)**

1. **Transplanting (7mks)**

* Transplant when tomato seedlings are one month old, 3-4 weeks old or with - 3 true leaves
* Transplant in the evening in the morning on during a cloudy day.
* Water the nursery bed first to ensure that seedlings are uprooted with a ball of soil attached on their roots
* Uproot only healthy and vigorously growing seedlings
* Plant at same depth they were in the nursery.
* Firm the soil around the base of the seedling
* Apply a little mulch
* Water the seedlings.

(any 1x8=8marks)

1. **Harvesting (3mks)**

* Tomatoes are ready for harvesting 3 months after transplanting.
* Harvest tomatoes for canning when they are fully ripe.
* Harvest for fresh market when they are partially ripe
* Grade tomatoes appropriately.**(any 1 x3 = 3mks)**