**443/1**

**AGRICULTURE**

**PAPER 1**

**MARKING SCHEME.**

1. An artificially prepared chemical compounds, with known value, that are added to the

soil to provide nutrients.

***OWTTE 1mk***

1. Branches of horticulture.
   * Pomology / fruit farming
   * Floriculture / flower farming
   * Olericulture / vegetable farming ***1 mk each = (3mks)***
2. Phosphorus is lost through
   * Leaching
   * Soil erosion
   * Uptake / utilization by crops
   * Fixation by iron and aluminium ***½ mk each = 2mks***
3. **Disadvantages of row planting.**
   * Requires skills (measuring distances)
   * Expensive – time spent
   * Labour demanding
   * Encouraging soil erosion as a lot of spaces are left uncovered on soil surface.

***1 mk for any 3 pts = 3mks***

1. - Leaf analysis.
   * Soil analysis
   * Deficiency symptom
   * Plant ash analysis ***1mk each for any 3 pts =3mks***
2. **Causes of forking.**
   * Condition of heavy soils
   * Condition of a lot of undecomposed organic matter in the soil. ***1mk for each point 2mks***
3. **Negative effects of wind in farming.**
   * Causes lodging / damage / break crops.
   * Increases the rate of evapotranspiration hence causes wilting.
   * Blow away rain bearing clouds
   * An agent of soil erosion
   * Increases the spread of diseases and pests
   * Destroys farm structures. ***1mk for any 3 points = 3mks***
4. **Opportunity cost.**
   * The cost of the best alternative forgone / forgone returns of the best alternative.

1mk

1. **Benefits of using polythene sleeves in nursery seedlings.**
   * Roots are not disturbed
   * The farmer can plan on when to plant awaiting for favourable conditions because the seedlings can be stored securely.
   * Seedlings are easier to carry / transport.
   * Soil borne pests and diseases are evaded since fresh mixtures are prepared everytime seedlings are planted (prepared)

***1 mk each for any 3 pts = 3mks***

1. **Biotic factors that positively influence agriculture.**
   * Pollinators
   * Decomposers
   * Nitrogen fixing bacteria

- Predators in crops / plantation ***1 mk each for any 3 pts = 3mks***

1. **Types of product – product elationships.**
   * Competitive products
   * Joint products
   * Supplementary products
   * Complementary products ***1 mk each for any 3 pts = 3mks***
2. **Advantages of tissue culture.**
   * There is mass production of propagules
   * Faster pace of work / quicker
   * Space required is small.
   * Offspring are often disease pathogen free. ***1 mk each for any 3 pts = 3mks***

**SECTION B**

1. **a) pH Stands for – potential hydrogen ion concentration in the soil. 1mk**

**b) Graph x :-** Phosphorus is least available at low pH (high acidic conditions )

and is highly available at high pH (high alkaline conditions).

**Graph y :** Potassium is highly available at low pH (high acidic conditions) and is least available at high pH (high alkaline conditions)

***each elaborate explanation 1mk each= 2mks.***

1. **At pH of between 2-** **5.**
   * Crops are likely to show deficiency symptoms of phosphorus (graph x )
   * Crops are likely to be affected by fungal diseases
   * Sizes of grains may increase ( for graph y)
   * Plants would not lodge ( from graph y)
   * Enough chlorophyll (from graph y) ***1mk each for any 1 points = 1mks***

**etc**

1. **a) Blossoms –end –rot 1mk**

**b) -** Excess nitrogen in the early stages of growth.

**-** Deficiency of calcium in young fruit.

- Infrequent watering ***1 mk each 3mks***

**c) Control measures**

- Regular / frequent watering

- Addition of calcium containing fertilizers e.g. C.A.N ***1mk each 2mks***

1. **a)** The document is one which a buyer receives from a seller after goods and

services have been sold and payment made in cash. ***1mk = 2mks***

**b)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CASH SALE**  **Phone : 05221 P.o Box**  **2004, Kisii**  **Date: 2/7/07**  **From : Shamji traders**  **To: M/s Jane** |  |  |  |  |
| **Qty** | **Particulars** | **@** | **Shs.** | **Cts** |
| **3kgs** | **Sugar** | **75** | **225** | **00** |
| **½ kg** | **Cooking fat** | **120** | **60** | **00** |
| **20 kgs** | **Rice** | **40** | **800** | **00** |
| **4 pkts** | **Wheat flour** | **75** | **300** | **00** |
| **2 pkts** | **Baking powder** | **20** | **40** | **00** |
| **3 kgs**  **E & O.E** | **Minced meat**  **No 1203** | **150** | **450** | **00** |
| **Goods once sold are Not returnable .TOTAL** | **1875** | **00** |  |  |

***Mark in halves as shown 5mks***

1. If purchases were made on credit An invoice could have been used. 1mk

16. a) **Identity of field practice**

A. Trellising

B. Propping

C. Staking ***½ mk each = 1 ½ mks***

1. **Crops trellised include:-**
   * Cucumbers
   * Grapevine
   * Passion fruits
   * Pumpkins ***½ mk for any three points = 1 ½ mks***

**SECTION C**

17. a) **Shortcomings of weeds in mixed farming**

- They compete with crops for nutrients, water, space and light.

- They reduce the quality of farm products e.g. Mexican merigold

taints milk, Devils horsewhip lowers the quality of wool.

* + They poison livestock e.g. thorn apple .
  + They form alternate hosts for pests and diseases
  + Some are allelopathic – suppressing the growth of cultivated crops by producing toxic compounds
  + Some cause irritation e.g. stinging nettle
  + Aquatic weeds block irrigation channels
  + Their control increase the cost of production
  + Some lower the quality of pasture / lower carrying capacity.
  + Some are parasitic to crops.
  + Some aquatic weeds block navigation and interfere with fishing.

***1 mk for any 8 pts = 8mks***

b) **Cultural pest control measures**

- Timely planting

- Timely harvesting

- Proper tillage

- Close season planting

- Trap cropping

- Crop rotation

- Planting of resistant crop varieties

- Ensuring field hygiene

- Alteration of environmental conditions

- Enhancing proper crop nutrition / fertilizer application

- Destruction of alternate host.

- Use of clean planting material

- Proper spacing

- Irrigation.

18. **Maize production for grain from land preparation to harvesting.**

- Preparation of seedbed early to kill weeds .

- Prepare land well to kill perennial weeds.

- Harrow the land to medium / fair tilth soil.

- Plough along the contours to reduce sol erosion.

- Use modern tools / appropriate tools in land preparation.

- Planting should be done at the onset of rains.

- Dry planting can be done two weeks before the rains.

- Space according to the cultivars / variety(75- 90 x 23 – 30 cm)

- Plant one to two seeds per hole.

- Plant at the depth of 2.5 – 10cms/ 3 – 4 times the diameter of the seed

plant certified seed from the reliable dealers.

* + Place seeds more shallowing in moist soil and deeply in dry soils
  + Plant by hand for small farms or tractor drawn implements for large farms,
  + Use phosphatic fertilizers at planting time ( e.g DAP, DSP etc).
  + Use phophatic fertilizers at the rate of 120 – 150 kgs / hect ( teaspoonful per hole)
  + Thin the seedlings to 1 seedling / hole at the height of 10 – 15 cm.
  + Incase of some seeds failing to germinate, gapping its should be done
  + Weeds should be controlled in time manually or by use of herbicides / selective herbicides e.g. 24D or MCPA.
  + Weed two to three times if manually done.
  + At the height of 15cm, tillers should be removed .
  + Pests like maize stalk borer, e.t.c should be controlled using appropriate pesticides.
  + Topdress with nitrogenous fertilizers at the height of 45cm / knee high at the rate of 100kgs / hectare.
  + Second top dressing at tarselling stage with nitrogenous fertilizer at another 100kgs / hectare.
  + Rogue the diseased plants
  + Harvesting should be done after 3 ½ - 9 months depending on variety.
  + Harvest when the crop is dry / moisture content of 15 – 20 % of grain.
  + Harvesting is by hand in small scale / dehusking or use of combine harvesters in large scale.
  + Cal and stook the maize to hasten drying if harvested manually.

1 pt for any 20 points = 20mks

19. a) **Importance of water.**

- For domestic use of washing utensils drinking e.t.c.

- For watering livestock (drinking) cleaning.

- Cleaning livestock structures / cleaning the livestock.

- Diluting chemicals for control of pests, parasites, diseases.

- Used in constructing of farm produce i.e.Coffee hides and skin e.t.c

- Used in construction of farm building i.e. mixing of concrete.

- Used in irrigating crops i.e. during dry season.

- Used for recreation i.e. swimming.

- Used for fish farming. ***1mk for any six points= 6mks***

1. **Water treatment**
   * **Filtration** / sieving / screening at the water intake :- water passes through a series of sieves from the source before intake.
   * **Softening** **of** **water**

In the mixing chamber (small tank) water circulates and mixes with soda ash to soften and alum for precipitation.

* + **Coagulation.**

Solid particles coalese together / flocculate together to form larger particles

* + **Sedimentation.**

- The coagulated particles settle down in the tank.

- The tank is left open to ease out any bad smell.

- Water stays here for 36 hrs to kill bilharzia germs.

- **Filtration**

- This is done in a tank where all the remaining particles like silt

are removed.

* + **Chlorination.**

**-** Little amount of chlorine added to the water in the tank to kill germs (micro- organisms)

- **Storage**

**-** Water is stored in large tanks before distribute.

***Mention of treatment stage – 1mk***

***Explanations given 1 mk each***

***Maximum of 14 mks***