**MARKIN SCHEME**

**AGRICULTURE**

**PAPER ONE**

**FORM FOUR**

**2019**

1. **Reasons why famers are advised to use certified seeds**
* They give 100 percent germination
* They are free from pest and diseases
* They give high yields after fist planting

 **(1/2x 2 marks)**

1. **List four methods of drainage used in Kenya.**
* Open ditches
* Underground drain pipes
* French drain
* Cambered bed
* Pumping
* Planting trees

  **(1/2x 4)marks**

1. **Methods of practicing rotational grazing**
* Paddocking
* Strip grazing
* Herding
* Tethering

 **(3x1/2 marks)**

1. **Ways of modifying soil pH**
* Application of lime
* Application of basic fertilizers
* Application of acid fertilizers e.g,S.A
* Application of sulphur.

 **(4 x ½ marks)**

1. **Reasons for carrying out minimum tillage**
* To minimize on cost
* To minimize on disturbance of roots
* To maintain structures
* To conserve soil structure
* It is less labour demanding
* Soil nutrients are not exposed to volatilization

 **(4 x ½ marks)**

1. **Cultural methods of pest control**
* Timely planting
* Timely harvesting
* Close season
* Crop rotation
* Use of clean planting materials
* Proper spacing
* Trap cropping
* Plant resistant varieties
* Field hygiene
* Proper tillage
* Crop nutrition
* Use of farmyard manure
* Alteration of environmental conditions e.g open pruning

 **(4 x 1/2marks)**

1. **Human factors that influence the efficiency of Agricultural production**
* Level of education
* Health
* Economy
* Market forces
* Government policy
* Transport and communication
* Social and cultural practices
* Market force

 **(1/2 x4 marks)**

1. **Ways through which one would acquire land**
* Inheritance
* Trough settlement and resettlement by the government
* Through buying
* Compensation

 **(1/2 x4 marks)**

1. **Benefit of correct plant population in annual crops**
* To obtain high quality crop
* To obtain high yields
* Help the famer to control weeds/pests/diseases

Help to control soil erosion/soil and water conservation **(1/2 x4 mark)**

1. **Advantages of propagating tea using cuttings**
* It establishes faster
* There is retention of genetic characteristics
* There is early maturity
* It is high yielding

**(1/2 x2 marks)**

1. **Reasons for treating water to use in the farm**
* To kill pathogens
* To remove chemical impurities/soften water
* To remove bad taste
* To remove sediments

**(1/2 x4marks)**

1. **Difference between oversowing and under sowing**
* Oversowing is the establishment of pasture/legume in an existing grass/pasture while undersowing is the establishment of pasture/grass under a cover crop e.g maize **(1 x1 mark)**
1. **Advantages of tissue culture**
* It gives rise to pathogen tree plant
* It is fast
* It requires less space
* Many plant materials are raised at ago

 **(1/2 x3 marks)**

1. **Disadvantages of overheadd irrigation**
* Expensive to instal pipes ,sprinkler e.t.c
* Encourages fungal diseases such as C.B,D
* may cause soil erosion on slopy grounds
* requires a lot of skill to maintain **(1/2 x4marks)**
1. **characteristics of clay soil**
* cracks when dry
* high fertility/cation exchange
* sticks when wet
* hard when dry
* poorly drained/high water retention capacity
* high capillarity
* has small fine particles

 **(1/2 x4marks)**

1. **reasons why weeds are competitive**
* some weeds produce large number of seeds
* weeds remain viable in the soil for a long time
* weeds have an effective means of propergating
* they have a short lifecycle

 **(1/2 x4marks)**

1. **advantages of communal land tenure**
* helps tom reduce land disputes
* there are problem of landless
* it helps to reduce land fragments
* there is free movements of livestock
* hardworking members of the community reap maximum benefits from this form of land tenure

**(1/2 x4marks)**

**SECTION :B 20 MARKS**

1. **DIAGRAM**
2. rock catchment (**1/2 marks**)
3. Root catchment

 **(1/2 mark**)

(b)

**M-**Gutter **(1mark)**

**N-**Spill way/Overflow **(1mark)**

**P-**Drain pipe (**1mark)**

(c)**other methods of water harvesting**

 Water pumps

 Pounds

 Draine pipes (**2 x1marks**)

1. (a) (i)**-D**

 **(**II)Birds find it difficult to punch out

 **(b)Fungal diseases of maize in the field**

Rust

 Smut

 White leaf blight

 (2 x1)

1. (a) use of individual peg method **(1 x 1mark)**

**(b) procedure of the named method**

* The tea bushes is allowed to grow to a height of 25-30 cm
* It is cut back to height of 15 cm from the ground
* The lateral branches that grow are left to reach a length of 60 -75 cm
* The branches are pulled downward and held in position and held in apposition of 30-45 degrees using wood pegs
* The terminal buds of the branches are pinched out

 **(1/2 x5 marks)**

**(c**) formative pruning **(1/2 x1 mark)**

**(d)** is the practice that involve removal of three leaves and bud from each shoot that grow above the require plucking table **(1 x1 mark)**

1. **(a)** overhead/sprinkler irrigation **(1 x 1mark)**

 **(b)**

* it encourages blight in tomatoes
* it is expensive
* it result to uneven distribution of water in the field
* it can cause soil erosion if not well control
* it can cause soil capping due to water impact with the soil
* it can knock down flowers and fruits

 **(3 x1 marks)**

 **(c)**

* use of watering can
* use of hose pipe

 (**2 x 1marks)**

**SECTION C:40 MARKS**

1. **(a) Methods of breaking seed dormancy**
* Burning the seed coat
* Scarification/physical breaking of the seed coat
* Seed subjected to heat to destroy hard coat
* Seed dressing- coating seed with chemicals
* Chitting-inducing potato tubes to shoot and root
* Use of chemicals
* Soaking in water
* Storing the seed over a given period

**(1 x8marks)**

 **(b)factors determining the spacing of crops**

* Soil fertility fertile soil will support closely spaced crops
* Size of the plant- crops forming canopies required wide spacing
* Moisture availability- high soil moisture encourages close spacing
* Mechanization- mechanical expectation required wider spacing
* Pests and disease control-good spacing prevents quick spread of diseases
* Purpose of the crop- forage crops are more closely spaced than food crops

 **(1 x4marks)for stating**

 **(1 x4marks)for explaining**

**(c)factors determining time of planting**

* Climatic conditions- prevailing rainfall pattern determine the crops to grow
* Market demand- early planting enable crops to mature early before the market is flooded
* Weed control- plant early before weed germinate
* Pest and disease control-plant crop early for them to outgrow stages when adversely affected by pests

**(1 x4 marks)**

**23. a)biotic factors that influence crop production**

* Pest –they transmit crop disease/increase crop production/injure plants parts/feed on whole or parts of crop
* Decomposes-they cause rotting of organic matter
* Pathogens-they cause death /reduce quality and quantity of crop
* Predators-they feed on pest benefiting the farmer
* Pollinators-they transfer pollen grains in flowers causing crop pollination/help in production of new varieties
* Nitrogen fixers-they convert nitrogen in the air into nitrates enriching the soil
* Parasites-some like striga cause stunted growth in maize

**(2 X 5 marks)**

 **b) cultural methods of pest control**

* Using health planting materials
* Practicing field hygiene
* Proper seed preparation
* Proper spacing
* heat treatment
* proper drying of cereals
* use of disease resistant varierties

**(1 x6 marks)**

 **(c) factors contributing to effectiveness of herbicides**

* concentration of the herbicide
* weather conditions during application
* stage of growth of weeds
* method of application
* weed metabolic factors
* type of weeds
* mode of action of the herbicide

**(1 x 4 marks)**

**24.PRODUCTION OF MAIZE UNDER THE FOLLOWING SUB-HEADIND**

1. **land preparations**
* clear the land
* prepare the land before the onset of the rains
* plough deeply to eradicate weeds especially pereunial grasseseg couch grass/ carry out primary cultivation
* ensure seedbed is of medium tilth to avoid soil erosion/carry out secondary cultivation
* plough should be done using disc or mould board plough
* remove tree stumps

**(1 x5marks)**

 **(b).planting**

* apply phosphate fertilizer at planting
* ensure planting is done early
* all planting should be done by first week of onset of rains
* planting can be done manually or mechanically
* sow two seeds per hole at the depth of (2.5 -5)cm as deep as 10 cm in dry soil
* use of certicified seed or healthy seed dressed with mercurial chemical against soil borne pest and disease/appropriate fungicides
* sow maize at a spacing of (75-90)cm x(23-30)cm depending on the cultivator
* timely planting is very crucial in maize as delayed planting always reduce yields
* early planting also reduce attack by stalk bores

(1 X 6 MARKS)

**c)field practices**

* thinning-carry out thinning when maize is about 15cm tall/carry out gapping
* fertilizer application-phosphate and nitrogenous fertilizers are mostly used
* top dressing with nitrogenous fertilizer when the maize is at the knee height 45-60)cm at rate of 200 kg/Ha
* apply 120kg p205 per hectare
* weeding- first weeding is recommended when thinning and herbicides like simaize,atrazzine,mcpa are used in large scale farming
* control pests using appropriate method
* control diseases appropriately

**(1 x5 marks)**

 **(d) harvesting**

* maize is ready (4-12) months depending on the cultivator and altitude-
* cut and stook in the field to allow cobs to dry
* cobs are removed by hands and stored
* maize cobs are later shelled
* maize cobs are burnt in large scale farms
* hired labour can be used in small scale farms,while combine harvesters are used in large scale farm

**(1 x4 marks)**