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**CEKENAS END OF TERM ONE EXAM-2022**

**FORM FOUR**

*Kenya Certificate of Secondary Education. (K.C.S.E)*

**AGRICULTURE**

**PAPER 1**

***MARKING SCHEME***

**SECTION A**

**ANSWER ALL QUESTIONS IN THIS SECTION**

**1. State four reasons for practicing grafting in citrus production (2mks)**

- Plants with desirable root characteristics but with undesirable fruits can be used to produce desirable fruits.

- Facilitates changing the top of the tree from being undesirable to desirable.

- Makes it possible to grow more than one type of fruit on the same plant.

- Repair of damaged trees.

- Shorten maturity age.

- Less thorny.

 (4 x ½ mks)=2mks

**2. Mention four types of soil erosion by water (2mks)**

 - Splash/Raindrop erosion

 - Sheet erosion

 - Rill erosion

 - Gully erosion

 (4 x ½ mks) =2mks

**3. Differentiate between coppicing and pinching out (2mks)**

Coppicing is a method of harvesting trees by cutting the stem to leave about 15cm above the ground, while pinching out is a method of pruning where the terminal bud is removed to encourage lateral growth.

(Mark as a whole)

**4. Give four benefits of possessing certificate of land ownership (2mks)**  - Can be used to secure credit facilities

 - Confer security of tenure

 - Encourages the farmers to invest on long term projects

 - Enable the land owner to lease part of whole of the land

 (4 x ½ mks)

**5. Give one reason why each of the following nursery management practices are carried out. (2mks)**

 **(i) Hardening off**

- Prepares the seedlings to adapt to the ecological conditions of the seedbed

**(ii) Watering before transporting seedlings from the nursery bed**

- Enable lifting seedlings with a lump of soil

 (2 x 1 = 2mks)

**6. Name four effects of excessive nitrogenous fertilizer application on tomatoes**

**(2mks)**

- Blossom end rot

- Too much vegetative growth

- Cracking of fruits before maturity

- Prolonged maturity

 (4 x ½ mks) =2mks

**7. State four early maturing varieties of cabbages (2mks)**

- Sugar loaf

- Mukuki

- Golden acre

- Gloria hybrid

- Copenhagen market

 (4 x ½ mks) =2mks

**8. State four ways by which Agriculture contributes to national development**

 **(2mks)**

1. Food supply
2. Market for industrial goods
3. Foreign exchange
4. Source of raw materials
5. Tax to government

(4 x ½ mks) =2mks

**9. List four methods of land acquisition (2mks)**

 - Inheritance

 - Buying

 - Settlement and resettlement by government

 - Compensation

(4 x ½ mks) =2mks

**10. State four roles of trees in soil and water conservation (2mks)**

 - Protects soil against strong rain drops

 - Act as windbreakers

 - Roots bind soil particles together preventing soil erosion

 - Reduce speed of surface run-off

 - Leaves decay to supply humus

 (4 x ½ mks) =2mks

**11. State any four types of livestock farming (2mks)**

 - Pastoralism

 - Fish farming

 - Bee keeping

 - Poultry keeping

 (4 x ½ mks) =2mks

**12. a) State two ways by which a soil of pH 3 can be raised to pH 5 (1 mk)**

- Application of lime

- Application of basic fertilizer

**b) Name any two types of soil structures (2mks)**

- Single-grained

- Crumby

- Granular

- Prismatic/columnar

- Platy

- Blocky

 (2x ½=1mk)

**13. State four factors that determine the number of secondary cultivation to be done on a seedbed (2mks)**

 - Size of planting materials

 - Slope of land

 - Moisture content of soil

 - Condition of land after primary cultivation

 (4 x ½ mks) =2mks

**14. Mention any four factors that should be considered when selecting site for making compost manure (2mks)**

 - Well drained place

 - An accessible area

 - Located at the centre of the farm

 - Away from the direction of prevailing wind

**15. a) Define the following terms:**

**i) Opportunity cost (1/2 mk)**

 Is the value of the foregone alternative

 **ii) Agricultural economics (1/2mk)**

A branch of Agriculture that deals with utilization of scarce resources

**b) Give two types of farm records that a large scale farmer should keep**

**(1mk)**

 - Health records

 - Breeding record

 - Inventory record

 - Production record

 (2 x ½ = 1mk)

**SECTION B**

**ANSWER ALL QUESTIONS IN THIS SECTION**

16. The diagram below shows a method of irrigation

1. **Identify the method (1 mark)**

 Drip/Trickle irrigation

 **b) State two advantages of the irrigation system named in (a) above.**

**(2mks)**

* - Minimizes labour requirement
* - No need to construct dykes
* - Practised on both sloppy and flat lands
* - Water does not cause erosion
* - Reduce incidences of fungal diseases
* - Economises on use of water
* - Minimizes possible theft of pipes

(2 x 1 = 2mks)

**c) State any two factors to be considered when choosing the method of irrigation to use in an area (2mks)**

 - Capital availability

 - Topography of land

 - Water availability

 - Type of soil

 - Type of crops to be irrigated

(2 x 1 = 2mks)

17. The diagram below is a tool used to harvest crops in the farm. Use it to answer the questions that follow

1. **Identify the tool represented above (1 mark)**

 Cane harvesting matchet

 **b) Name the crop harvested by use of the tool above. (1 mark)**

 Sugarcane

 **c) Name the part labeled A on the tool (1 mark)**

 Cane felling hook

 **d) Give one reason why the crop named in (b) above should be cut at ground**

**level (1 mark)**

- To avoid loss of yield

- To ensure proper establishment of ratoon crop

 (1 x 1mk)

**e) Give a reason why the leaves of the crop should be removed after cutting**

**(1 mark)**

 - To avoid some growth substances from flowing back

 - To avoid lowering the quality of sugar

**18. An agronomist recommends application of 130kg N, 55kg P2O5 and 65kg K2O after testing a soil sample. Calculate the amount of urea (46%N), Single super phosphate (20% P2O5) and Potassium chloride (50% K2O) that should be applied on the land. (5mks)**

1. **Urea (46% N)**

**100kg Urea 46kg N**

 **? 130kg N**

**130 x 100 = 282.6 = 283kg Urea**

 **46**

1. **SSP (20% P2O5)**

**100kg SSP 20kg P2O5**

 **? 55kg P2O5**

**100 x 55 = 275kg SSP**

 **20**

1. **KCL (50% K2O)**

**100kg KCL 50kg K2O**

 **? 65kg K2O**

**100 x 65 = 130kg KCL**

 **50**

**19. The diagram below illustrates a weed**

 **i) Identify the weed (1 mark)**

Oxalis/Oxalis latifolia/Oxalis spp

**ii) State one competitive ability of the weed illustrated above. (1 mark)**

 Underground structures (bulbs) that regenerate

 **iii) State two mechanical control measures for the weed above (2mks)**

- Digging out/ tillage

- Slashing

- Uprooting

 (2 x 1= 2mks)

**iv) Classify the weed above according to plant morphology (1 mark)**

Broad-leafed

**SECTION C (40 MARKS)**

**ATTEMPT ANY TWO QUESTIONS IN THE SPACE PROVIDED**

**20. a) Describe five qualities of mother plant that should be considered when**

**selecting vegetative materials for planting (5 marks)**

- High yielding

- Resistant to pests and diseases

- High quality produce

- High rooting ability

- Early maturing

 **b) List seven benefits of using organic matter for mulching (7 marks)**

- Improves soil aeration upon decomposition

- Reduced toxicity of plant poisons upon decomposition

- Reduces soil erosion

- Improves soil structure on decomposition

- Modifies the soil temperature

- Adds nutrients on decomposition

- Improves water infiltration

- Increases microbial activity

- Controls weeds

- Reduces evaporation of water

- Buffers soil pH upon decomposition

 (7 x 1-7mks)

**c) Describe the field production of nappier grass under the following**

**sub-headings**

 **i) Planting (3 marks)**

- Plant at the onset of the rains/early planting

- Select desirable nappier grass variety for the ecological area

- Use healthy planting materials

- Use cuttings/canes or splits for planting

- Cuttings/canes should have 3-5 nodes

- Select cutting from mature canes/stems

- Place planting materials in furrows/holes

- Cover the planting materials with soil to appropriate depth

 **ii) Fertilizer and manure application (3 marks)**

* Apply phosphatic fertilizer during planting
* Apply farmyard/compost manure for planting
* Rate of organic manure should be 7-10 tons/ha
* Apply organic manure after harvest and incorporate into the soil
* Top-dress with nitrogenous fertilizer (CAN) 6-8 weeks after planting

 **iii) Utilization (2marks)**

- Cut and feed to the ruminants

- Defoliate/cut at the right stage of growth 3-5 months old whne stems are 1-1.5high

- Cut the stems at 2.5-5cm above the ground surface

- Use a sharp panga for cutting

- Conserve excess as silage

- Chop napier grass into small pieces

- It can be dried and used as mulch

**21. a) Describe the procedure of silage making (8 marks)**

- Prepare the silo before harvesting the crop

- Cut the crop at the appropriate stage

- Chop up the crop and put into a silo compacting it every 10-12cm layer

- Fill the silo rapidly (preferably 2 days)

- Check the temperature regularly and maintain it at appropriate range

- Cover with polythene to protect it from water and air

- Cover the silo with a thick layer of soil to maintain the ridge appearance

- Dig a trench around the silo to drain off rain water

 (8 x 1=8mks)

1. **State and explain four factors that determine the depth of planting**

**(8 marks)**

* Soil type – plant deeper in light soils such as sands and shallower in heavy soils e.g. clay
* Soil moisture content – plant deep in dry soils to place the seeds in a moist zone
* Size of the seed – larger seeds are planted deeper in soils than the smaller ones
* Type of germination – seeds with epigeal type of germination should be planted shallower than those with hypogeal type

**c) Outline four roles of Agriculture in Kenya’s economy (4 marks)**

- Food supply

- Source of employment

- Provision of foreign exchange

- Source of raw materials for industries

- Provision of market for industrial goods

- Source of money or capital

**22. a) Outline seven effects of land fragmentation and subdivision (7 marks)**

- Time is wasted while travelling from one holding to another

- Difficult to control weeds and pests

- Difficult to follow a sound farm plan

- Difficult to supervise the scattered plots

- Difficult to control parasites and diseases

- Difficult to carry out soil conservation measures

- Impossible to control grazing

  **(7x1=7mks)**

**b) State and explain three methods of pruning (6 marks)**

- Annual pruning

Involves the removal of branches that have borne two crops and have undesirable characteristics

- Pinching out

Involves the removal of terminal buds

- Coppicing or pollarding

Carried out in tree crops where branches are cut at specified points in order to achieve a desired shape

 **Stating – 1mk explaining – 1mk = 6mks**

**c) Describe the establishment of vegetative propagation nurseries (7 marks)**

- Select the suitable site

- Clear and level the site

- Establish vegetative propagation unit measuring 3.66m by 1.22m

- Fill polythene sleeves measuring 7-10cm in diameter and 20-30cm long with a rooting mixture

- Water the sleeves

- Insert the cuttings seedlings at the centre of each sleeve

- Arrange the sleeves in the propagation unit

- Erect wooden loops over the sleeved cuttings

- Place polythene sheet on the loops

- Burry the polythene sheet into the ground at the edges

 **(7x1=7mks)**