

NAME: ..... ADM NO: ..... CLASS: .....

**443/1  
AGRICULTURE  
PAPER 1  
FORM 3  
END OF TERM 2 EXAM 2020  
MARKING SCHEME**

**INSTRUCTIONS:**

This paper consists of 3 sections; A, B and C. Answer all questions in section A and B and any two in section C.

1. Name three branches of horticulture. (1 ½ mks)
  - Pomology/fruit growing
  - Floriculture/flower growing
  - Olericulture/vegetable farming
  
2. State four advantages of organic farming. (2mks)
  - Reduces pollution
  - Improves soil water retention
  - Improves soil texture
  - Provides feed for soil microbes
  - Improves soil water infiltration
  
3. What is the importance of decomposers in agriculture? (1 mk)
  - Causes rotting of organic matter in soil farming manure
  
4. State three basic economic concepts. (1 ½ mks)
  - Opportunity cost
  - Scarcity
  - Preference and choice
  
5. (a) What is concession company? (1/2 mks)
  - Tenure system in which the government rents land to a company for a specified period of time.
  
- (b) Give two examples of individual land tenure system. (1 mk)
  - Owner-operation
  - Plantation and concession
  - Landlordism/tenancy

6. (a) Differentiate between solifluction and landslide. (2 mks)
- Solifluction: slow movement of materials down the slope
  - Landslide: fast movement of materials downslope.
- (b) Name four types of landslide. (2 mks)
- Debris fall
  - Slump
  - Debris slide/slip
  - Rock slides
  - Rock fall
7. Give three control measures of Blossom-end rot disease. (1 ½ mks)
- Regular watering
  - Application of calcium compounds in soil
  - Use of right amount of nitrogen.
8. How are crop pests classified according to the mode of feeding. (2 mks)
- Those with biting and chewing mouth parts
  - Those with piercing and sucking mouth parts.
9. State any three effects of diseases to crops. (1 ½ mks)
- Lower yields/quantity
  - Lower quality
  - Increases cost of production.
10. State six effects of weeds in a pasture crop. (3 mks)
- Reduce life span of the pasture
  - Compete with pasture
  - Reduce quality of pasture
  - Reduce herbage yield
  - Some cause poisoning of livestock
  - Interfere with forage fertilization
- b. Define a weed – any crop growing where its not needed.
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11. List two ways of classifying herbicides based on mode of action. (1 mk)
- Contact herbicides
  - Systemic herbicides

12. State four factors considered when grading tomatoes for fresh market. (2 mks)
- Size of the fruits
  - Shape
  - Degree of ripeness
  - Damage on tomatoes
13. Give possible causes of swelling on roots of legumes. (1 mk)
- Presence of rhizobium in the roots.
14. What is a companion crop? (1 mk)
- A crop grown in the field to help suppress weed growth and control erosion.
15. List two main methods of pruning. (2 mks)
- Pinching out
  - Annual pruning
16. State two functions of polythene sheet when used as mulch material. (1 mk)
- Regulation of soil temperature
  - Control of weeds
  - Reduce soil erosion
  - Conserves moisture
17. Give any four factors that influence seed rates. (2 mks)
- Desired crop stand
  - Germination percentage
  - Recommended spacing
  - Purpose of the crop
  - No. of seeds per hole
  - Method of planting

**SECTION B: (20 MARKS)**

18. The diagram below illustrates a crop. Study it and answer the questions that follow.

(a) Identify the parts labeled K, L and M. (3 mks)

- K – Crown
- L – Slip
- M - Sucker

(b) Apart from the parts mentioned above, list down five other vegetative materials used for crop propagation. (2 mks)

- Corns
- Bulb
- Stem tuber
- Bulbils
- Splits
- Vines
- Sett
- Rhizomes

19. Study the diagram below and answer the questions that follow.

(i) What are the dimensions of the figure shown above? (1 mk)

- 1.2m x 1.2m x 1.2m

(ii) Name the parts labeled A, B, C and D. (2 mks)

- A - Topsoil
- B – Ash
- C – Organic manure
- D – grass, leaves, refuse

(iii) State the importance of level A in this set up. (1 mk)

- Introduces micro-organisms necessary for decomposition.

(iv) State two factors considered when selecting a site for a compost pit. (2 mks)

- A well drained place
- Direction of prevailing wind
- Size of the farm
- Accessibility.

20. A farmer with one hectare of land requires 40kg of N in his farm. He applied CAN which costs Ksh 35 per kilogram. CAN contain 20kg N.

(a) Calculate the amount of CAN the farmer requires. (2 mks)

$$20\text{kgN} = 100\text{kg CAN} \quad \checkmark \quad (1\text{mk})$$

$$40\text{Kg} = ?$$

$$\frac{40 \times 100}{20} = 200\text{kg CAN} \quad \checkmark \quad (1\text{mk})$$

(b) How much will a farmer with one and a half hectares spend to apply in his farm? (3 mks)

$$200\text{kg CAN} = 1\text{hec} \quad \checkmark \quad (1\text{mk})$$

$$? \quad 1.5 \text{ hec}$$

$$\frac{200 \times 1.5}{1} = 300\text{kg CAN} \quad \checkmark \quad (1\text{mk})$$

$$\therefore 1\text{kg CAN} = 35/-$$

$$\begin{aligned} 300\text{kg CAN} &= 300 \times 35 \\ &= 10,500/- \quad \checkmark \quad (1\text{mk}) \end{aligned}$$

(c) List five characteristics of nitrogenous fertilizers. (2 ½ mks)

- Highly soluble
- Highly volatile
- Hygroscopic
- Scorching effect
- Short residual effect

(d) State the two methods employed during soil sampling. (1 mk)

- Traverse
- Zigzag

(e) Define soil sampling – this is collecting of sample of soil to represent the whole land.

**SECTION C: (40 MARKS)**

21. (a) Discuss the importance of crop rotation to a farmer. (12 mks)

- There is maximum utilization of nutrients. Different crops vary in their nutrient requirement in terms of type and depth of absorption.
- Helps in control of soil-borne pests and diseases. Some pests and diseases specific to various crops are easily curbed by alternating crops from different families.
- Controls weeds: Weeds associated with certain crops are easily controlled e.g. striga in grass family crops.
- Helps to improve soil fertility: Inclusion of a leguminous crop in the program helps to restore soil fertility.
- Improves soil structure: Glass hay when included in the rotation restores soil structure.
- Helps to control soil erosion: Crops with poor growth cover should be alternated with those having good cover to prevent/control soil erosion.

(b) Discuss the factors that determine harvesting of a crop. (8 mks)

- Use or purpose of the crop: The intended aim of planting a crop is considered e.g. maize for silage making is harvested bust before flowering.
- Concentration of the required chemicals: Guided by the part being harvested e.g. in coffee, the ripe berries are the ones harvested.
- Market demand: Consumers preference should be considered e.g. harvesting maize at green stage for fresh market.
- Weather conditions: Dry spell is most preferred for most crops to prevent losses.

- Market price and profit margin, harvesting can be delayed or done early depending on the trends in the market.

22. (a) Discuss the process of water treatment using a chemical treatment system. (12 mks)

- **Stage I: Filtration at water intake**
  - Water is passed through a series of sieves of different mesh before entering the intake pipe.
- **State II: Softening of water**
  - Water flows to a mixing chamber where soda ash and aluminium sulphate are added in equal proportions.
- **State III Coagulation and sedimentation**
  - Water moves to large open tanks where solid particles settle down. Air circulation in water also occurs to remove bad smells.
- **Stage IV : Filtration**
  - Water is made to pass through a filtration tank with layers of different sizes of gravel and sand. This is to remove the remaining solid particles.
- **Stage V: Chlorination**
  - In the chlorination tank, some small amount of chlorine is added depending on the amount of water to kill micro-organisms
- **State VI: Storage**
  - Treated water is stored in large tank before distribution to consumers.

(b) State and explain various methods used during land leasing. (8 mks)

- Tree felling: Involves cutting down trees
- Burning: Fire is set on the vegetation. However, care should be taken to prevent spread to unintended grasses.
- Use of chemicals: employs use of herbicides which kill weeds faster.

23. (a) Explain various harmful effects of weeds. (10 mks)

- Lower quality of agriculture produce
- Some weeds are poisonous to man and livestock e.g thorn apple.
- Some weeds act as alternate host for insect pests and diseases.

- Some weeds are parasitic to cultivated crops e.g witch weed in maize.
- Weeds compete with crops for nutrient, space, light and soil moisture.
- Some weeds are difficult to control e.g stinging nettle.
- Some block irrigation channels, affect oxygen levels in water.
- Some have allelopathic effect-surpress growth of crops
- Weeds lower quality of pastures
- Block navigation.

(b) State ten cultural methods employed in pest control.

(10 mks)

- Timely planting
- Timely harvesting
- Proper tillage
- Close season
- Trap cropping
- Crop rotation
- Planting resistant crop varieties
- Field hygiene
- Altering micro-climate
- Crop nutrition
- Destruction of alternate hosts
- Use of clean planting materials
- Proper spacing
- Use of organic manure
- Irrigation



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