MARKING SCHEME

AGRICULTURE
FORM 3
PAPER 1 EXAMINATION

1. Name two field management practices that are carried out to obtain optimum plant population in a crop field. (1mk)

Thinning
Gapping

2. Give two farming practices done in organic farming that are environmentally friendly. (1mk)

Use of farmyard manure
Use of green manuring crops

3. Name two types of pipes used in coverage of water during irrigation. (1mk)

Metallic pipes
Plastic pipes
Hose pipes

4. Name three forms of horticulture practiced in Kenya. (1 ½ mks)

Floriculture
Olericulture
Pomology

5. State four reasons for ploughing the land deeply. (2mks)

To remove weeds
To incorporate organic matter into the soil
To expose pests
To encourage water infiltration
To improve soil aeration
To make subsequent operations easy

6. Outline four factors that determines the rooting in cuttings. (2mks)

Temperature
Leaf surface area
Relative humidity
Light intensity
Oxygen supply
Chemical treatment

7. State two ways in which crop rotation controls weeds. (1mk)

It breaks life cycle of weeds
Control weeds that are specific to certain crops

8. Name four characteristics of a crop that can be used for green manuring. (2mks)

Hardy
Leafy vegetative
Fast maturing
Should decompose easily
Should have nitrogen content

9. State two practices carried out to achieve minimum tillage. (1mk)

- **Use of herbicide to control weeds**
- **Uprooting to smoother weeds**
- **Slashing**
- **Cover cropping**
- **Restricting cultivation to the crop base**

10. Give four reasons for establishing cabbages in a nursery bed. (2mks)
    - **Many seedlings are produced**
    - **Small seeds can be planted**
    - **Excess seedling can be sold**
    - **Transplanting of already healthy seedlings**
    - **Provides best conditions for growth**
    - **Easy to perform routine management practices**
11. Give four reasons for treating water before distribution. (2mks)
    - **To kill disease causing micro organisms**
    - **To remove bad oduors**
    - **To remove sediments**
    - **To remove chemical impurities**
    - **To allow additional of essential**
    - **Chemical where necessary**
12. State two types of labour records. (1mk)
    - **Labour utilization analysis**
    - **Muster roll**
13. Give four reasons why certified seeds are recommended. (2mks)
    - **They gives high yields**
    - **They are free from diseases**
    - **Proven to have 100% germination percentage**
    - **They are pest free**
14. Give two areas of study that makes agriculture to be regarded as a science. (1mk)
    - **Agricultural engineering**
    - **Plant and animal breeding**
    - **Entomology**
    - **Crop pathology**
    - **Soil science**
15. Identify two practices that are commonly used in hardening seedlings in a nursery. (1mk)
    - **Reducing the shade**
    - **Reducing watering**

16. Give four advantages of using seeds as planting materials. (2mks)
    - **Seeds are not bulky**
    - **They can be planted using machines**
    - **Easy to handle**
    - **Can be applied together with manure/ fertilizer**
    - **New varieties can be developed**
    - **Can be treated against soil borne pest and diseases**
17. State four different types of irrigation that can be used by farmers. (2mks)
    - **Surface irrigation**
    - **Overhead irrigation**
    - **Sub-surface irrigation**
    - **Drip/ trickle irrigation**
18. Name three diseases that affect cabbages. (1 ½ mks)
    - **Damping off**
    - **Black tot**
    - **Downy mildew**
19. State four reasons why burning of fields is discouraged in crop production. (2mks)

- **Destroy organic matter**
- **Skills soil micro organisms**
- **Destroys plant nutrients**
- **Changes soil pH**

SECTION B (20 MARKS)

20. The diagram below shows a crop attacked by a pest.

a) Name the pest. (1mk)
- **Cut worm**

b) Name any two types of vegetable crop likely to be attacked by the pest. (2mks)
- **Cabbage/ kales**

c) State two methods of controlling the pest. (2mks)
- **Spraying the crop using insecticides**
- **Flooding**

21. The diagram below shows a method of layering. Study it and answer the questions that follow.

a) Identify the method of layering illustrated above. (1mk)
- **Aerial layering/ murcotting**

b) State one circumstance in which this method of layering is recommended. (1mk)
- **Plants whose branches cannot bend easily**

22. A maize farmer was advised to apply 150kg CAN per hectare while topdressing the maize crop. CAN contain 21% N. Calculate the amount of Nitrogen applied per hectare. (3mks)

% $\frac{NC \times 100}{TW}$ $\frac{21 \times 150}{100}$ or 100kg supply – 21kgN / 150kg ?

21 = $\frac{NC \times 100}{150}$ = 31.5kgN $\frac{150 \times 21kgN}{100}$ = 31.5kgN

23. The diagram below illustrates an experiment carried out by a form one student. Study it and answer the question that follows.

a) State the aim of the experiment. (1mk)
- **Show the presence of living organisms in the soil**

b) Explain the results in set up. (2mks)

i) E_1 - **Lime water turns milky**

ii) E_2 - **Lime water remains clear**

c) Why is soil in E_2 strongly heated. (1mk)
- **To kill the soil micro organisms/ act as a control experiment**

d) Identify one beneficial aspect of living organisms in the soil. (1mk)
- **Aerates the soil**
- **Causes wathering**
- **Fixation of nitrogen**
- **Decomposition of organic matters**

4. The diagram below shows a tomato fruit attacked by a pest study it and answer the questions below.

a) Identify the pest. (1mk)
- **American bollworm**

b) State two methods of controlling the pest above. (2mks)
- **Case season**
- **Spraying insecticide**

c) Name the other crops attacked by the pest above. (2mks)
- **Citrus** - **Pea**
- **Maize** - **Sorghum**
- **Cotton**
- **Beans**

SECTION C (40 MARKS)

Answer ANY two questions in this section

25. a) Explain five ways in which draining land encourages crop growth. (5mks)
- **Reduces soil erosion by increasing water holding capacity thus reducing run off.**
- **Increasing soil aeration necessary for rooting respiration and micro organism**
- **Increasing soil volume in which the crops can obtain nutrients**
- **Increasing microbial activities due to amount of water is reduced**
- **Lowering water table favours production of certain crops that are not aquatic**
- **Toxic substances e.g excess salts are removed**

b) Describe five ways in which soil loses fertility. (10mks)
- **Soil erosion – when the top fertile soil is carried away**
- **Change in pH – Alteration of soil affects availability of certain nutrients to crops.**
- **Burning of land – leads to volatization of nutrients**
- **Uptake of nutrients - by weeds when weeds are not controlled**
- **Leeching – Soluble nutrients are carried deep into the soil beyond plant reach**
- **Accumulation of salt leads to changes in soil pH**

- **Mono-cropping leads to exchanging of certain soil nutrients.**

c) Describe five advantages of mulching. (5mks)

- **Modifies/ regulating soil temperatures as it acts as an instructor.**
- **Maintain soil moisture as it reduces excessive evaporation of water.**
- **Controls soil erosion as it reduces the speed of surface run off.**
- **Controls weeds by suppressing their growth.**
- **Improves soil structure when they decomposes and water holding capacity.**
- **When they decomposes they add soil nutrients.**

26. a) Outline the effects of wind on agricultural production. (11mks)

- **Crop lodging - strong winds causes bending of crops or breakage leading to low yields.**
- **Soil erosion – Soil fertility is lost when top soil is eroded.**
- **Loss of water – Strong winds causes evapotranspiration.**
- **Spread of weeds and diseases – Winds causes dispersal of weed seeds and spread of diseases to crops.**
- **Pollination – Winds disperses pollen**
- **Cooling effect – Wind reduces heat stress to crops.**
- **Destruction of farm structures by blowing away the roof.**

b) Briefly mention the importance's of soil organic matter. (9mks)

- **Enriches soil with nutrients when they decompose.**
- **Improves soil structure due to having a flocculating nature hence aeration.**
- **Provides a good habitat for useful soil micro-organism**
- **Help to buffer soil pH – The soil is able to resist changes in pH.**
- **Regulates soil temperature due to its dark colour.**
- **Improves water holding capacity**

27. a) Give three characteristics of nitrogenous fertilizers. (3mks)

- **Soluble in water**
- **They are easily leached**
- **They have a short residue effect**
- **They have a scorching effect**
- **They are highly volatile**
- **They are highly corrosive**
- **They are hydroscopic**
- **They are easily leached**
- **They are soluble in water**

b) Describe the production of tomatoes under the following subheadings.

i) Ecological requirements (3mks)

Attitude – 0 to 2100 metres above sea level
Rainfall – 760 – 1300mm (well distributed)
Soil – deep, fertile and well drained

ii) Land preparation (5mks)

- **Select a field where members of solanacae family have not been planted lately**
- **Primary cultivation is done**
- **Harrowing to a medium filth**
- **Dig holes at a depth of 15cm and a spacing of 90 x 60cm or 100cm x 50cm**
- **Add a teaspoon/ hand full of well rotten manure per hole and mix with top soil**

iii) Transplanting (4mks)

- **Water the nursery bed**
- **Select healthy and virgorously growing seedlings**
- **Lift with a lump of soil attached to the roots**
- **Place the seedlings at the same depth it was in the nursery bed.**

- **From the soil around the base of the seedling**

iv) Field management practices

- **Top dressing**
- **Weeding**
- **Staking**
- **Pruning**
- **Pest and disease control**
- **Harvesting and marketing**
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