**443/1 – AGRICULTURE PAPER 1 – MARKING SCHEME**

1. Olericulture is the growing of vegetables while Pomoculture is the growing of fruits.

(Mark as a whole) (1 x 2 = 2mks)

2.

- Has improved soil structure.

- Has reduced leaching.

- Has improved water holding capacity.

- Has increased cation exchange capacity.

- Has high micro organisms which increases decomposition of organic mater which decompose to release nutrients. (4 x ½ = 2mks)

3.

- Facilitates aeration.

- Facilitates drainage.

- Breaks hard pans / facilitate water infiltration.

- Brings up leached nutrients.

- Facilitates development of deep rooted crops.

- Exposes lower soil layers to weathering.

- Exposes soil borne pests and pathogens.

- Removes deep rooted weeds. (4 x ½ = 2mks)

4.

- Centrifugal / Rotar dynamic pump

- Reciprocating / piston pump.

- Hydram pump

- Rotary pump (4 x ½ = 2mks)

5.

- Rapid growth rate.

- Production of abundant foliage.

- Rich in plant nutrients / leguminous / rich in nitrogen.

- Ability to decay quickly.

- Adaptable to wide range of conditions / hardy. (4 x ½ = 2mks)

6.

- Date of treatment.

- Symptoms of disease.

- Animals affected.

- Drugs which were used.

- Cost of treatment. (4 x ½ = 2mks)

7.

- To obtain seed suitable to ecological conditions.

- To obtain pure planting material.

- To increase germination percentage.

- To remove pests and disease infested planting material. (4 x ½ = 2mks)

8.

- Watering

- Weed control.

- Pricking out

- Pest control

- Disease control

- Hardening off (5 x ½ = 1½mks)

9.

- Rogueing is the uprooting and destruction of crops that are infested with pests and diseases. Thinning is the uprooting / removal of excess seedlings to allow space for the remaining seedlings. (Mark as a whole) (1 x 2 = 2mks)

10.

11.

12.

13.

14.

15.

- Damping off

- Black rot

- Downy mildew (3 x ½ = 1½mks)

- Altitude should be 0 – 2100m above sea level.

- Rainfall should range between 760 – 1300mm per year.

- Temperature should range between 18 – 290C

- The soil pH should be between 5.5 – 6.5 (4 x ½ = 2mks)

- High price of commodity.

- Taxation.

- Expected decrease in price of the commodity.

- Advertisement reduction.

- Decrease in population size.

- Reduced income of consumers / inflation.

- Lower tastes and preferences by consumer / reduced fashion of commodity.

- When price of substitute decreases. (4 x ½ = 2mks)

- Protection of trees.

- Pruning.

- Training.

- Grafting old trees. (4 x ½ = 2mks)

- Rotational grazing / controlled grazing.

- Proper stocking rate.

- Conserve excess pasture.

- Timely defoliation.

- Practice zero grazing.

- Graze different classes / species of animals. (4 x ½ = 2mks)

- The name and signature of owner of the land / identification number of owner.

- The size of land.

- The land parcel number.

- Type of owner, if any.

- Seal of issuing officer and signature of issuing officer.

- The date of registration. (4 x ½ = 2mks)

**SECTION B**

16. (a) (i) By planting grass / suitable vegetation. (ii) Channel / trench.

(b) - Measure and mark the layout of drain.

- Dig and remove soil from the channel and heap it on the lowerr side of the drain. (4x ½ = 2mks)

17. (a) H – Gutter (1 x 1 = 1mk) K – Drainage pipe (1 x 1 = 1mk)

(b) Let out excess water (1 x 1 = 1mk)

18. (i) X – Loam

Y – Sand

Z – Clay (3 x ½ = 1½mks) (ii) Soil Y (sandy) ( ½ mk)

(iii) It has drained the highest amount of water as opposed to others. (1mk)

(iv) Soil Z / Clay soil (1mk) (v) It is not easily drained / does not loose water easily when flooded for rice production.

19. (i) - Mallow weed / Malva verticillata. (1 x 1 = 1mk) (ii) - Poisonous / Toxic to livestock. (1 x 1 = 1mk) (iii) - Mechanical (Acc. any specific method)

- Biological

- Cultural (Acc. any specific method)

- Chemical (Acc. any correct chemical)

Rej. Legislative. (any 2 x ½ = 1mk) (b) Presence of underground storage structures / rhizomes which are difficult to control. (1mk)

20. (a) F – Granular structure (½mk) G – Platy structure (½mk)

(b) X – Humus with clay (½mk) Y – Air space (½mk)

(c) - Impedes drainage / water infiltration.

- Prevent root penetration.

- Influence soil aeration. (any 2x1 = 2mks)

**SECTION C**

21. (i) (a) **Field preparation**

- The field should be cultivated to a fine tilth.

- Construct / repair bund around the field.

- Flood the field 4 days after transplanting.

- Flood the field up to 10cm above the surface.

- Puddle the soil to the required tilth / rotavate the soil.

- Level the field by dragging a board to obtain level seedbed.

- Construct inlet and outlet. (5 x 1 = 5mks)

(b) **Water control**

- Increase water level from 5cm to 15cm.

- Water is increased gradually.

- Allow water to flow slowly through the fields / allow fresh water at 2 – 3 weeks interval. (3 x 1 = 3mks)

(c) **Field management**

- Control weeds by uprooting / use of appropriate herbicide

- Control birds by scaring or by destroying breeding colonies.

- Water should be changed every 2 – 3 weeks / let water flow slowly through the field.

- Drain water 3 weeks before harvesting / when heads turn down.

- Maintain level of water at 1/3 height of plants until 3 weeks before harvesting.

- Top dress with sulphate of ammonia at 250kg/ha in two portions.

- Top dress just before transplanting and after 40 days.

- Control diseases i.e. Anthracnose by growing resistant varieties, use clean seeds. Or bacteria blight uprooting and destroying infected plants or spray with colliar oxychloride. (5x1 = 5mks)

(ii) (a) Pyrethrum

- Picked flowers are put into open woven baskets to allow proper ventilation.

- Only dry flowers are picked to avoid fermentation and heating up.

- Flowers are not compacted in the basket to avoid heating up and fermentation.

(3x1 = 3mks)

(b) Tea

- Tea leaves are not compressed in a basket.

- Harvested tea leaves are kept cool under a shade as harvesting continues.

- Tea leaves are delivered to the factory on the same day after harvesting. (1x3 = 3mks)

22. (a) - Consumable goods inventory records.

- Permanent goods inventory records. (2 x ½ = 1mk)

(b)

- Helps in decision making

- Enables the farmers to predict future returns.

- Helps farmer to avoid incurring losses by investing in less profitable enterprises.

- It ensures a periodic analysis of the farm business.

- It acts as a record which can be used for future reference.

- It pin points efficiency or weakness in farm operations.

- Enables farmers to secure loans from financial institutions. (6 x 1 = 6mks)

(c)

**KIPSINENDE FARM BALANCE SHEET**

**AS AT 01 – 06 – 2022**

23. (a)

• **Stage I – Filtration at the water intake.**

**(½ x 26)**

- Water is made to pass through series of sieves so that large particles are trapped.

• **Stage II – Softening of water**

- Water is mixed with soda ash (NAHCO2) in small tank to soften it.

• **Stage III – Coagulation and sedimentation**

- Allum is added to water to facilitate coagulation and sedimentation.

- Water stays in the tank for 36 hours to kill bilharzias.

- Tanks open to remove bad small / odour and for aeration.

• **Stage IV – Filtration**

- Water passes through filtration tank where all remains solid particles removed.

• **Stage V – Chlorination**

- Water enters chlorination tank where chlorine is added to kill germs.

• **Stage VI – Storage**

- Treated water is stored in large tanks before distribution.

(stage mentioned – 1mk, explanation – 1mk) (6 x 2 = 12mks)

(b)

(c)

(i) Nature of soil e.g. sandy soils are easily eroded whereas clay is resistant to erosion. (ii) Shape of the land – the steeper the shape of the land the higher the erosivity.

(iii) Rainfall intensity – the higher the intensity of rain the higher the erosion. (iv) Rainfall amount – the higher the amount of rainfall the higher the erosion.

(v) Strength of wind – the stronger the wind the higher the erosive power.

(vi) Bareness of the land – bare land are prone to erosion.

(5 explained points) (5 x 1 = 5mks) NB: No mark for just stating.

- One type of nutrient is used leading to its exhaustion.

- Nutrient is used from a certain zone where roots can reach.

- Leads to build up of certain pests and diseases. (3 x 1 = 3mks)