**MARKING SCHEME AGRICULTURE FORM 3 PAPER 1**

1.

* High yields due to application of high level of managerial skills and advanced technologies.
* Enables production of high quality productions.
* Available land is maximumly utilized. (½ × 4 = 2 mks)

2.

* Delayed maturity.
* Too much vegetative growth
* Blossom end rot.
* Cracking of fruits before maturity. (½ × 4 = 2 mks)

3.

* Practice crop rotation.
* Destruction of infested crop residues.
* Closed season.
* Rogueing /uprooting and burning infected crops.
* Timely planting / early planting.
* - Intercropping with a crop that deters the pests. (½ × 4 = 2 mks)

4.

* Size of the farm.
* Weather conditions.
* Type of irrigation system used.
* Soil type.
* Type of enterprise carried out in the farm.
* Source of the water.
* - Presence of water conservation measures. (½ × 4 = 2 mks)

5.

* Nearness to the water source
* Types of soil
* Topography
* Previous cropping
* Security
* Well sheltered place (½ × 4 = 2 mks

6.

* Shifting cultivation
* Traditional system
* Population pressure on a limited area of land
* Accumulation of land holdings
* Offering of land to settle debts (½ × 3 = 1½ mk

7.

* Serrentive / compound layering.
* Tip layering.
* Trench layering.
* - Aerial / marcotting layering. (½ × 4 = 2 mks)

8.

* Ability to produce many seeds
* Seeds remain viable in the soil for a long time awaiting conducive germinating conditions
* Easily dispersed
* Ability to propagate vegetatively
* Elaborate extensive rooting system
* Ability to survive in less nutrient supply
* Short life cycle (½ × 4 = 2 mks)

9.

* No soil and water conservation.
* Overcharging by the tenant.
* No long term investment if lease period is through.
* - No incentive to develop land with no written/formal agreement. (½ × 4 = 2 mks)

10.

* Master roll.
* Labour utilization analysis. (½ × 2 = 1 mk)

11.

1. To prevent soil borne pests and diseases attack. (½ mk)
2. To increase nodulation / to enhance nitrogen fixation. (½ mk)
3. To break dormancy in tubers / encourage sprouting in tubers (½ mk)

12.

* Thinning
* Gapping
* Desuckering
* Pruning (½ × 4 = 2mks)

13.

* Burrowing animals they dig on soil hence break it to small bits of rock particles.
* Large animals as they move over rocks they exert pressure causing them to break.
* Man activities e.g. mining.
* Plant roots penetrate through the rock cracks exert pressure on wall hence they break.
* - Plants decay to produce organic acid which corrode with rock minerals. (½ × 4 = 2mks)

14. To suppress weeds.

* To control pests like rodents. (½ X 2=1mks)

15.

* Regulate bearing.
* Remove old / unwanted branches.
* Ensure air circulation to create micro-climate unfavourable for pests or diseases.
* Regulate the weight for easy harvesting.
* Control fruit leaf ratio
* - Open the crop for easy spraying / economise chemical spray. (½ × 4 = 2mks)

16. Facilitate soil aeration.

* Improves water infiltration.
* Brings leached nutrients near the soil surface for the crop benefit.
* - Facilitates root penetration. (½ × 4 = 2mks)

17. Avoid addition of organic manure to the soil. (1 × 1 = 1mk)

1. Earthing up the shoulders of the carrots. (1 × 1 = 1mk)

**SECTION B: (20MKS)**

18. a) Four heap system / stalk method. (1 × 1 = 1mk)

X

Y

X

Z

Field

½

½

½

½

½

½

½

½

b)

 (½ × 8 = 4mks)

 **NB**: Mark on arrows if the letters are well identified.

19. a) A- cutworm

B- Maize stalk borer. (1 x 1=1mk)

 b)

* Burrow tunnels in the stems and growing tips destroying transport system.
* Eats leaves and reduce photosynthetic surfaces.
* Bores holes on maize cobs reducing the yields. (1 x 2=2mks)

 c)

* Timely planting
* Crop rotation
* Close season
* Trap cropping
* Field hygiene. (2x2=2mks)

20. a) A - Double thorn *(Oxygonum sinuatam)* (1 × 1 = 1mk)

 B - Stinging nettle *(Urtica massaica)*  (1 × 1 = 1mk)

 b) .Irritating effect to the farmer

* Cause injury. (1 x 2 = 2mks)

 c) Source of food / vegetable.

* + Medicinal value.
	+ Upon decomposition add nutrients into the soil (1 x 2 = 2mks)

21. a) T – budding (1x1=1mk)

 b) A – Scion

 B – Rootstock (1 x 2 = 1mk)

* Plants with desirable root characteristics but with undesirable products can be used and improved to be better producers. ;
* Changing the top of the tree is possible / top working. ;
* More than one type of fruit or flower can be propagated on the same tree. ;
* Some clones can only be propagated in this manner. ;
* Maturity period of crops is shortened. (1 x 2 = 2mks)

22.

a) Topography

* Crop to be irrigated
* Type of soil
* Water availability
* Capital availability

b)Stone lines - Are stones heaped along contour to trap soil that is being washed away /check run off.

* + Trash lines - Train or crop residues are heaped along contour to trap soil before it is washed away.
	+ Cut-off drains / diversion ditches - They are channels that divert water run off from cultivated
	+ slopes into areas where it can cause erosion.
	+ Gabions/porous dams - Are boxes made of wire mesh and filled with stones. They are built across
	+ slopes - dry valley or gullies to trap soil and reduce speed of run off.
	+ Ridging - ridging ridges constructed along contours of the field to slow down run-off and trap
	+ eroded soil.
	+ Bunds - Heaps of soil on earth built on sloping land along contours trap.
	+ Dams - Reduce its speed / run off speed.
	+ Terraces - constructed on hilly areas by exacavating soil throwing uphill. (fanya juu terrace)

or down (fanya chini terrace) hence slow down surface run-off and divert water away from cultivated. (2 × 5 = 10mks)

23. a)

* + Mulching - apply light mulch on the nursery bed after sowing to conserve moisture.
	+ Watering - water regularly twice a day.
	+ Weed control - uproot weeds to prevent competition against growth factors.
	+ Shading - provide shade to avoid direct sun heat that would result in high evapotranspiration.
	+ Pest control to ensure vigorous and healthy growth.
	+ Diseases control - control using appropriate method to enhance healthy growth.
	+ Picking out - remove overcrowded seedlings thus ensure healthy growth.
	+ Fertilizer application to supplement nutrients in the soil.
	+ Hardening off - reduce watering frequency to enable seedlings acclimatize to the normal
	+ conditions in the field.
	+ Root pruning- to make lifting of the seedlings easier, encourage short, dense and strong
	+ Rooting system. (1 × 10 = 10mks)

 b) Reduce cost of production.

* + Control soil erosion.
	+ To maintain soil structure.
	+ To prevent disturbances of roots.
	+ Prevent exposure of humus to adverse conditions e.g. sun’s heat hence volatilization of nitrogen. (1 × 6 = 6mks)

24. a) Use of open ditches/channels/furrows

* Use of underground pipes
* French drains
* Cambered beds
* Mechanically pumping
* Sub soiling
* Planting trees (5x1=5 mks)

 b) Rainfall amount

* Attitude
* Expected yield/yield potential
* Maturity period
* Farmers preference and choice (5 x 1=5 mks)

 c)

* Increase the rate of evaporation of moisture from the soil
* Causing lodging in cereals and damage to crops
* Blowing away and bringing rain bearing clouds
* Agent of seed dispersal
* Agent of soil erosion
* Increases evapo transpiration rate
* Increasing spread of pests and diseases
* Destroying farm structures
* Brings cooling effect.
* Aids in spreading pathogens
* Causes stress by chilling of young livestock and crops. (10 x1=10 mks)