**AGRICULTURE PAPER 1 MARKING GUIDE**

**PAVEMENT FORM 4 TRIAL 2 2021/22**

**443/1**

**MARKING SCHEME**

**SECTION A(30 MARKS)**

1. **Name two methods of farming that are considered outdated ( ½ x 2 =1mark)**
* Shifting cultivation
* Nomadic pastoralism
1. **State three symptoms of potassium deficiency in plants ( ½ x 3 = 1 ½ marks)**
* Premature leaf fall
* Leaf curling
* Leaf becomes chlorolic/ turns yellow
* Poorly developed roots and tubers
* Leaf edges are scorched
1. **State two ways of controlling late blight in tomatoes**
* Regular spraying with appropriate/ recommended fungicides
* Uprooting and destroying infected plants/ field hygiene/ rogueing **( ½ x 2=1mark)**
1. **Name three financial documents in farm accounts**
* Invoice
* Receipt
* Purchase order **( ½ x 4=2marks)**
* Delivery note
1. **State four farming practices which can enhance proper light penetration in a crop.**
* Thinning
* Weeding
* Pruning
* Wider spacing/ proper spacing **( ½ x 4= 2marks)**
* Monocropping
1. **Give four factors which determine the method of weed control in crop production**
* Type of weed
* Stage of growth/ size/ age
* Type of crop affected
* Available skills
* Weather conditions
* Capital available **( ½ x 4=2marks)**
1. **State four causes of seed dormancy**
* Lack of oxygen
* Lack of moisture in the soil
* Old stage/ prolonged storage period/ Depleted food reserves **( ½ x 4=2marks)**
* Impermeable testa to water/ oxygen
* Damage by pests and diseases
1. **List four effects of weeds on pastures**
* Reduce quality and quantity of forage
* Interfere with forage utilization **( ½ x 4=2marks)**
* Reduce life span of pasture
* Complete with forage crops for moisture, nutrients and sunlight
1. **State four qualities to be considered when selecting seeds for planting**
* Germination percentage
* Free from pests and diseases **( ½ x 4=2marks)**
* No physical damage
* Clean/ pure
* Uniform in size, color
* High vigour
1. **State three farming practices which may lead to multiplication of pests**
* Monocropping
* Indiscrimination use of pesticides
* Poor choice of planting materials **( ½ x 3 = 1 ½ marks)**
1. **Give three pieces of information to be found in a master roll**
* Name of worker/ person
* Pay roll number
* Days of the month **( ½ x 3= 1 ½ marks)**
* Days worked
* Rate of pay
* Total pay
* Signature
1. **State three objectives of land reform**
* Increase output from land
* Meet changing national and market demand.
* To achieve increasing productivity of both land and labour
* Increase commercial farming
* Increase land conservation and improvement **( ½ x 3 = 1 ½ marks)**
1. **Why is it important to weed early in crop production**
* Reduce weed competition for nutrients, space, light, water.
* Control spread of pests and diseases.
* To reduce production costs. **(1 x 2=2marks)**
1. **State three effects of late defoliation in pasture management**
* Forage has high DM content
* Forage has high cellulose content/ fibrous
* Forage has high lignin, cutin, tannin.
* Low leaf to stem ratio
* Low drying matter digestibility **( ½ x 3=1 ½ )**
* Low crude protein.
1. **Differentiate between undersowing and oversowing as used in forage Production**
* Over sowing: introduction of legume into an existing grass pasture.
* Under sowing- Introducing a pasture under a cover crop such as maize. **(2mks as a whole)**
1. **State three functions of a farm manager**
* Long term planning
* Short term planning
* Analyzing information
* Bearing risks and taking responsibility
* Implementing farm plans. **( ½ x 3 = 1 ½ marks)**
1. **State two ways of overcoming the effects of excess water in crop production**
* Drainage
* Planting water tolerant crops eg rice
* Timely planting to escape adverse effects of rain. **(1 x 2 = 2marks)**
1. **Give three symptoms of viral infections in crops**
* Leaf chlorosis
* Leaf curling
* Mosaics  **( ½ x 3 = 1 ½ )**

**SECTION B**

1. **a) Calculate the plant population in the whole field if all the seeds germinated**

 Plant population = Area of land

Spacing of group

 120m X 100m

 0.9m X 0.3m **(2marks)**

44,444.44

44 444 Plants

**b) State how the following factors influence spacing in crops**

 **(i)Fertile soil**

* Supports **high population** of plants hence **closer spacing (1mark)**

**(ii) High moisture content in the soil**

-High moisture content supports high population of plants hence closer spacing. **(1mark)**

1. **a) Identify the feature that the diagram above represents**

Soil profile

**b) Name the parts of the diagram labeled B, C and D**

 Parts **B**- Subsoil

 **C**- Substratum/weathered rock

 **D**- Parent rock/ Bedrock

**c) Outline three characteristics of the part labeled A**

 -Dark in color/contains, a lot of organic matter

 - Rich in plant nutrients

 - Is well aerated **( 1 x 3=3marks)**

1. Identity- giant looper **( 1 x 1=1mark)**

(ii) Crop attacked: coffee **1 x 1= 1mark**

 Part attacked: leaves **1 x 1=1mark**

(iii) Suitable control method- use of pyrethrum based sprays/ suitable insecticides. **(1 x 1=1mark)**

1. a)Done at the age of 12-18 months

 Done manually using pangas, cutlasses, matchetes

 Cut cane as close to the ground level as possible.

 Remove the green tops and leaves immediately to preserve quality.

 Deliver cane to factory within 48hrs of harvest. **(1 x 3=3marks)**

b) (i)Ratoon stunting

 (ii) headsmart of sugar cane **(1 x2 =2marks)**

**SECTION C (40 MKS)**

a. i) Clear the land using appropriate tools eg slashers

 Dig deeply/ primary cultivation using jembes, ploughs

 Harrow to medium tilth

 Done early/ dry season

 Eradicate all the weeds (1 x 4 =4mks)

 ii) Use certified seeds

 Done at the onset of rains/ early

 Spacing at (30-60) cm x 15cm depending on variety

 Dig holes to a depth of 2.5cm -10cm

 Use phosphatic fertilizer or DAP at the rate of 200kg/ ha

 Plant 2-3 seeds hole

 Mix fertilizer thoroughly with soil. (1 x6 =6mks)

 iii) Plant resistant varieties

 Through crop rotation

 Destruction of crop residues/ field hygiene

 Use certified seeds (1 x 5=5mks)

 Spray with recommended fungicides

b) Assist farmers to estimate the required production resources.

 Assist farmers when negotiating for farm credit.

 Help to reduce uncertainly in the farming process.

 Assist farmers in making management decision when comparing alternative projects.

 Shows the progress or lack of progress in the farm business.

 Forecast profits or fore see losses. **(1 x 5=5marks)**

1. a) Use of grass strips/ filter strips- trap solid

 Cover cropping- intercept grain drops

 Contour farming- improve infiltration

 Mulching- lower the speed of surface runoff.

 Cropping system eg crop rotation – improve soil structure.

 Strip cropping- trap soil particles

 Grassed/ vegetated waterways- trap soil particles

 Afforestation/ reafforestation- intercept raindrops

 Agroforestry- roots cementing soil particles

 Minimum tillage- improves soil structure. **(10marks)**

b) Drying of crops- makes produce hard for pest to pierce/ bore

Timely planting- crops grow fast and escape pests.

Timely harvesting- crops escape pests.

Close season- break life cycle of pests.

Trap cropping- attract pests away from desired crop and are killed.

Use of resistant crop varieties - discourage pests

Field hygiene- starves/ kills pests

Proper crop nutrition- leads to fast growth /resistant

Destruction of alternate host- controls infestation

Proper spacing/ thinning- discourage ease of transfer

Irrigation- discourages pests/ drowns pests

Application of pesticides- kills pests **(1 x 10=10mks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Land(in ha) | DAP fertilizer (in 20kg units) | Yield(90kg bags) | Marginal product(90kg bags) | Average products(90kg bags) |
| 1 | 0 | 2 | 2 | 0 |
| 1 | 1 | 10 | 8 | 10 |
| 1 | 2 | 24 | 14 | 12 |
| 1 | 3 | 42 | 18 | 14 |
| 1 | 4 | 56 | 14 | 14 |
| 1 | 5 | 62 | 06 | 12.4 |
| 1 | 6 | 60 | -2 | 10 |
| 1 | 7 | 56 | -4 | 7 |

i) Filling the marginal product column correctly **(2marks)**

 Filling the average product column correctly **(2marks)**

ii) Scale= 1mk

 Labeling axis- 2mks

 Plotting-1mk

 Smooth curve-1mk

 Name curve- 1mk

iii) Showing the three zones

 1mk for each zone i, ii, iii

b) Use of organic manure

 Early planting

 Rotation grazing

 Planting resultant varieties

 Practice minimum tillage

 Use plant extracts to control pests

 Maintain field hygiene

 Cover cropping

 Organic mulching **(1 x 7 = 7marks)**