**DIOCESE OF KAKAMEGA JOINT EVALUATION 431/1 AGRICULTURE**

**MARKING SCHEME 2022**

**SECTION A**

1. Four reasons why ranching is important.
* Animals can survive and do well in these areas where crop production is not possible.
* Pasture improvement in these areas help to increase the land carrying capacity.
* Animals can be moved with ease inside an enclosed area in search of food and water.
* It is an important way of earning a livelihood in the dry areas helping to relieve population pressures.
* It improves beef production in the dry areas in Kenya **(4x ½ = 2mks)**
1. Ways through which good transport and communication improves agricultural production.
* Agricultural goods from production units reach the intended consuners in good time.
* Highly perishable goods reach the market quickly before going bad.
* Farmers pay less to transport their goods due to efficient communication system.
* Farmers get market and research information in time enabling them improved economy.
* It has become easy to import education and change in technology through improved and fast network systems. **(4x ½ = 2mks)**
1. (a) The second ploughing is; second primary tillage. **(1 x ½ = ½ mks)**

(b) Importance of rolling;

- increase the contact of seed with the soil for ease germination

- To crash large soil clods;

- To compact the soil preventing wind erosion **(2x ½ = 1 ½ mks)**

**-** To prevent seeds from being blown away by wind;

1. a). Drainage – is the removal of excess water from the soil through lowering the water table;

b). Pumping – is the process of lifting water from sorce using mechanical force;

c). Piping – is the process of conveying water from from the source through pipes to where is used.

d). Irrigation – is the artificial application / provision of water to crops. (4 x ½ = 1 ½ mks)

1. soil fertility – is the ability of the soil to provide required nutrients to crops in proper proportions;
2. a). Opportunity cost is Kshs. 240,000 (beans) **(1x1=1mk)**

b). Opportunity cost exists under;

- when there is alternatives;

- when resources are not free (monetary value attached)

- when resource are scarce **(2 X ½ = 1mk)**

1. a). Elasticity of demand – is the degree of responsiveness of demand to charge in price; **(1x2=2mks)**

b). Conditions for purely competitive market (perfect).

- Many buyers and sellers;

- Homogeneity of the product/ identical product.

- Free entry and exit

- Perfect knowledge of the market

1. Calculations;

i). Number of rows

$\frac{300cm-\left(15cm+15cm\right)+1 }{75cm }$ = $\frac{270cm}{7cm }$

 = 3.6 + 1 = 5.6 rows

= 5 rows (1mk)

Number of plants per row;

ii). $\frac{400cm-(15cm+15cm)}{75cm }$ = $\frac{370cm}{30cm }$ x 2

 = 12.33x2= 25+1

 = 26 plants **(1mk)**

1. Herdening off activities.
* Reducing frequency of water / gradual reduction in watering.
* Gradual removal of shade. (word gradual must be there); reject shed**. (2 x ½ = 1mk)**
1. a). Disadvantages of traditional stores
* Rats and weevils attack is common
* Loss of grains through rotting
* Theft is prevalent
* Problems of fire outbreaks is common; **(3x ½ = 1mk)**

b). Meaning of;

i) Changing of cycle – is the replacement of old bearing stems by suckers;

ii) Training – is the practice of manipulating the growth of crops in a desired direction;

* Tipping – is the cutting back of shoots to the desired table height; **(3x ½ = 1 ½ mks)**
1. a). Early maturing cabbage varieties
* Brushswick
* Sugar loaf
* Early jersey
* Gloria hybrid
* Makuki
* Copen hagen market
* Golden acres
* Main crop **(3x ½ = 1 ½ mks)**
1. a). Ways through which trees conserve soil and water
* As wind breaks thus reduces the carrying away of top soil by wind;
* Leaves intercept rain drops reducing their impact on the soil resulting in less splash erosion.
* Fallen leaves upon decay help to improve soil structure by binding the soil particles thus making the soil less vulnerable to erosion.
* Trees reduce the speed and volume of run –off by encouraging infiltration
* The high infiltration encouraged trees aids in replenishing underground water reservoirs.

**(must explain; 2x ½ = 1mk)**

b). Differentiate between level and graded terrace.

* Level terraces are constructed with no outlet channels and act as retention channels while graded terraces are constructed in a way that they direct excess water out of the farm.
1. Differentiate between intensity and frequency of defoliation.
* Intensity of defoliation is the proportion of herbage removed through grazing and that of residual forage while frequency of defoliation is how often forage stand is grazed on/cut for feed.

**(1x1=1mk)**

1. a). Signs of nematodes on crop;
* stunted growth
* wilting
* decolouration of foliage
* gal formation/ root knots **(2 x ½ = 1mk)**
1. Economic injury level
* Is a point at which the damage on a crop by pest is beyond tolerance and has to be controlled **(1x1=1m)**
1. Bean plant in carrot crop is a weed because;
* When its economic disadvantages outweigh its economic and advantages.
* When it is growing out of place;
1. A - 17

B. - 14

C. – 10

D. – 14

1. a) i) Pruning – cutting of lower branches

 ii) Looping – cutting of higher branches

b). Trees used as livestock feeds

- Calliandra calothyrsus/ callindra

- Leucaena

-Sesbania sesban/ sesbania  **(2 x ½ = 1mk)**

**SECTION B**

1. a). 5 stand for N

20 stands for K2O reject K alone **(2x ½ = 1mk)**

 b). If 10,000m2 requires 200kg of 5:20:10 **(3x1 = 3mks)**

 (4x5)m2 = 20m2

 Therefore ($\frac{20m2}{10,000}$ x 200)

 = 0.4kg of 5:20:10

1. a). Aim of experiment

To compare porosity / drainage / water holding capacity of different soil samples;

b). A- sandy soil

 B- Loam soil; **(2x1=2mks)**

c). Ways of improving soil structure of sample C.

- Adding organic matter / manure

- Liming

- Sub-soiling

- Draining away excess water, **(2x1=2mks)**

1. a). Identify the disease; **(1x1=1mk)**
* maize smut disease; reject smut alone

b). Other crops attacked **(2x1=2mks)**

- sugarcane

- Wheat

- Barley

c). Control measures **(2x1=2mks)**

- Crop rotation

-Use of certified seeds

- Field hygiene

- Hot water treatment

1. a). Class of weeds based on morphology **(1x1=1mk)**
* Broad leaved weeds

b). A-double thorn (oxygonuum sinuatam) **(2x1 = 2mks)**

 C- stinging nettle (urtica massaica)

c). Reasons for difficulty in controlling weed B. **(2x1) = 2mks)**

 - Broken pieces of stem readily take root again

 - Have underground stems with pale, reduced leaves

 - Often produce flowers hence seed;

**SECTION C**

1. a). Production of tomatoes

i). – Elcological requirement;

 - Rainfall – 760mm-1300mm p.a well distributed

 - Low rainfall – requires irrigation / watering

 - Altitude -0-2100m a.s.1

 - Temperature 180C-290C

 - Soil-deep well drained fertile soils

 - Soil pH = 6.0 – 6.5 **(any 3x1 = 3mks)**

ii). Transplanting

* Done late in the evening or during cloudy days.
* Dig holes 15cm deep
* Spacing 90cm x 60cm or 100cmx50cm
* Put a handful of well rotten manure/ teaspoonful of DSP fertilizer per hole;
* Mix them with soil thoroughly;
* Place each seedling in the hole, cover and firm the soil around it (should be at the height and shade it;
* Mulch and shade it;
* Water;
* Water seedlings before transplanting;
* Lift the seedlings using a garden trowel with a lump (ball) of soil around the roots.

**(any 3x1=3mks)**

**iii). Field management practices**

* Top dress with CAN two times at 25cm height at rate of 100kg/ha and during fruiting at the rate of 200kg/Ha;
* Field should be free of weeds;
* Irrigation is recommended where rainfall inadequate;
* Staking should be done
* Pruning
* Mulching
* Pest control using appropriate method
* Disease control using appropriate method; (any 4x1 = 4mks)

b). Measure taken to minimize water pollution

 - Fencing of water sources to keep off pollution;

 - Application of soil conservation measures to control soil erosion

 - Avoid watering animals directly from water sources

 - Good disposal of effluent from processing factories

 - River bank should be vegetated by planting grass to minimize siltation in rivers;

 - Employ adequate storm water control methods and disposal systems especially in areas with heavy

 rains;

* Use non-chemical methods of farming such as organic farming; (5x1=5mks)

c). Precautions observed when harvesting pyrethrum

 - Deliver flowers soon after harvesting;

 - Picked flowers should be put in open woven baskets for ventilation;

 - Tins or polythene bags should not be used because they may lead to fermentation of flowers;

 - Wet flowers should not be picked because they may heat up and ferment

 - Flowers should not be compacted during picking to avoid heating up and fermentation;

 -The flowers should not be picked with the stems hence picked by twisting the head;

 - Avoid contamination of flower; (5x1=5mks)

1. a). Physical/structural methods of controlling soil erosion

 - Stone lines- rows of stones heaped along the contours which trap the soil and reduce speed of

 running water;

* Bunds heapof soil along the counters that reduce the speed of run off;
* Trash line- rows of heaped trash along the contours that trap soil and also add nutrients up on decomposition;
* Ridging – soil is dug to form a furrow and heaped on the upper side to form a hedge.
* Gabions/ porous dams- boxes of galvanized wire which are held with stones in gulleys to slow down the speed of flowering water and trap soil;
* Cut off drains/diversion ditches are deep channels that drain excess water.
* Terraces – embankments constructed along contours to slow down the speed of running water;
* Check dam-is a barrier that reduces speed of run off; (4x1=4mks)

b). Practices of maintaining soil fertility

- Control soil erosion – this ensures that the top soil remains in situation for crop use; crop rotation

 ensures maximum utilization of all nutrients uniformly;

- Control soil pH- this gives suitable conditions for the activities of living organisms;

- Proper drainage – prevents accumulation of certain nutrients to toxic levels in soil.

- Use inorganic fertilizer and manures – manures maintain soil structure as well as release nutrients

 when the decompose while organic fertilizer add more nutrients to the soil; (4x1=4mks)

c). Principles of crop rotation;

 - Cover crops should alternate with those which do not cover the ground.

- Deep rooted should alternate with shallow rooted crops

- Crops from the same family should not follow each other;

-Grass ley should be included in the rotation program

-Legumes / crops that are easy to weed with those that are not easy to weed;

- Alternate crops that are easy to weed with those that are not easy to weed

- Fallow should be included in the rotation program;

- Heavy feeders alternate with light feeders; (5x1=5mks)

d). Conditions for settlement;

- There should be high population pressure in reserves

- There should be adequate economic incentive to preserver;

- The social costs of moving from home community and the discipline imposed for sound agriculture

 and extra cost should be affordable;

- Settlers should come from far distance from the schemes in order to be able to break from

 traditional society and stay on scheme. This particularly is important settlers are to adopt new

 changes;

- Settlers should have enough capital; (5x1 = 5mks)

1. a). Importance of budding and grafting;
* Plants with desirable root characteristics may be utilized to produce desirable products;
* Facilitate changing of the top of the tree from being undersirable to desirable;
* Make it possible to grow more than one type of fruit or flower on the same plants;
* Help to propagate clones that cannot be propagated in any other way;
* Grafting helps rapair damaged trees; help shorten the maturity age; (6x1=6mks)\

b). Factors leading to wider spacing

- Use of machinery/mechanization;

- Less soil fertility need wider spaces

- Tall crop varieties require wider space

- Low Rainfall need wider spacing;

- Crop used for forage/silage require narrow spacing

- When controlling pest and disease

- Spreading and tillening crop varieties require wider spacing (6x1=6mks)

**c). CASH ANALYSIS**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATE  | PURCHASES AND EXPENCES |  |  |  |  |  |  |
|  | **Description**  | **Amount**  | **Dairy**  | **Maize**  | **Poultry**  | **Date**  | **Description**  | **Amount**  | **Diary**  | **Maize**  | **POULTRY** |
| 1/7/2003 | 20 empty trays  | 400 |  |  | 400 | 30/6/2003 | Cash at hand  | 50,000 |  |  |  |
| 1/7/2003 | 5 bags of DAP  | 10,000 |  | 10,000 |  | 1/7/2003 | Sold eggs 10 trays | 12,000 |  |  | 12,000 |
| 1/7/2003 | 5 bags Broiler starter  | 7,500 |  | 7,500 |  | 1/7/2003 | Sold Milk  | 4,000 | 4,000 |  |  |
| 30/7/2003 | Bought milk churn  | 500 | 500 |  |  | 20/7/2003 | Sold maize | 6,000 |  | 6,000 |  |
| 31/12/2003 | Closing bal. | 18,400 | 500 | 17,500 | 400 |  |  | 72,000 | 4,000 | 6,000 | 12,000 |
| 31/12/2003 | Cash at hand  | 53,600 |  |  |  |  |  |  |  |  |  |
|  |  | 72,000 |  |  |  |  |  | 72,000 |  |  |  |

 Heading – 1mk

Columns – Purchases & expenses – 1mk

 - sales and income – 1mk

Correct entries 8 x ½ = 4mks

Closing balances = 1mk

Cash at hand - 1mk

TOTAL 8 mks