**Term 2 - 2022**

**AGRICULTURE**

 **(MARKING SCHEME PAPER I)**

**FORM FOUR**

**SECTION A (30MARKS)**

**Answer all the questions in this section in the space provided.**

1. Advantages of intensive farming. (2mks)
* Increases production per unit area
* Farm supervision is easy
* Ideal for densely populated area/small land holdings
* Utilizes technology to increase production

½ x 4 = 2mks

1. Benefits of agroforestry to a maize crop. (2mks)
* Leguminous trees fix nitrogen into the soil
* Trees acts as wind breaks
* Trees stabilizes soil against soil erosion
* Leaf litter decompose forming humus/recycle nutrients
* Trees act as water catchment area/conserve water

½ x 4 = 2mks

1. Plant part used for vegetative propagation of each of the following plants.
2. Sisal - Bulbils/suckers (½ mk)
3. Pyrethrum - splits (½ mk)
4. Sweet potatoes – vine /stem cutting (reject cutting alone) (½ mk)
5. Sugar cane – setts (½ mk)
6. Cultural ways of controlling couch grass (2mks)
7. Mulching
8. Cover cropping
9. Crop rotation
10. Proper spacing
11. Clean seed bed
12. Flooding
13. Timely planting

½ x 4 = 2mks

1. Sources of underground water (1½mks)
* Springs
* Boreholes
* Wells

½ x 3 = 1 ½ mks

1. Causes of blossom end of rot in tomatoes (1½mks)
* Irregular watering
* Lack of calcium
* Excessive use of nitrogen

½ x 3 = 1 ½ mks

1. Qualities of a good green manuring plant (1½mks)
* Hardy
* Fast growth
* Ability to rot quickly
* Highly leafy
* Leguminous

½ x 3 = 1 ½ mks

1. Reasons for practicing minimum tillage. (2mks)
* Reduce cost of cultivation
* Control soil erosion
* Improve soil structure
* Conserve water

½ x 4 = 2mks

1. Records that should be kept by a poultry farms. (2mks)
* Health records
* Feeding records
* Labour records
* Egg production records
* Marketing records
* Inventory records

½ x 4 = 2mks

1. Ways in which pastures are classified (1½mks)
* Pasture stand; pure/mixed stand
* Pasture establishment; Natural/artificial
* Ecological zone

½ x 3 = 1 ½ mks

1. Ways in which land reforms can be implemented in Kenya. (2mks)
* Land consolidation.
* Land adjudication and registration/issue of title deeds
* Improve land legislation
* Tenancy reforms
* Land settlement and resettlement

½ x 4 = 2mks

1. Factors that determine the stage at which a crop is harvested. (2mks)
* Market price/market demand
* Weather conditions
* Purpose/intended use
* Taste and preference/form required
* Concentration of required chemical/colour/maturity

½ x 4 = 2mks

1. Beneficial effects of weeds to a farmer. (2mks)
* Some are edible to man
* Some have medicinal value e.g Datura strommonium/thorn apple
* Control soil erosion
* Some provide food to livestock
* Releases humus after decomposition

½ x 4 = 2mks

1. Advantages of practicing crop rotation. (2mks)
* Maximum use of nutrients
* Control buildup of pests and diseases
* Control weeds
* Improve soil fertility when legumesare included
* Control soil erosion when cover crops are included
* Improves soil structure if grass lay is included

½ x 4 = 2mks (reject if underlined word is missing)

1. Name four methods of controlling pests. (2mks)
* Biological methods – accept specific example
* Chemical method
* Cultural method – accept specific example
* Physical/mechanical method – accept specific examples
* Legislation.

½ x 4 = 2mks

1. Distinguish between intensive hedgerow and border planting forms of agroforestry (2mk)
* Intensive hedgerow – Trees or shrubs are planted in between rows of crops
* Border planting – Trees or shrubs are planted on the border of the farm.

**SECTION B (20 MARKS)**

**Answer all the questions in this section in the spaces provided.**

1. The following illustrations show different production function curves in agricultural economics. Study them and answer the questions which follows;
2. Identify the production function curves labeled A, B and C

A – Increasing returns production (1mk)

B – Constant returns production. (1mk)

C – Decreasing returns production (1mk)

 Reject if the word returns is missing.

1. What does the law derived from the production function labeled C state? (1mk)
* If successive units of one variable input are added to fixed quantities of other inputs, a point is reached when additional/extra/marginal product per additional unit of input declines.

1 x 1 = 1mk

1. Which one of the three production functions curves is rare in Agriculture (1mk)
2. B 1 x 1 = 1mk
3. Other factors influencing/limiting agricultural production e.g.
	* + Weather
		+ Biotic factor
		+ Disease attack

1 x 1 = 1mk (Reject if the answer in C (i) above is wrong.

1. The table below shows the population and gross domestic products of countries A and B

|  |  |  |
| --- | --- | --- |
| **Country** | **Gross Domestic product (million Ksh)** | **Population (million)** |
| A | 1800 | 36 |
| B | 1200 | 15 |

1. Calculate the per capita income for each country show your working (2mks)

Calculation of per capital income

Per capita income = $\frac{Gross Domestic product}{population}$

A = $\frac{1800}{36}=50$

B = $\frac{1200}{15}=80$

1 x 2 = 2mks

1. Which of the two countries is more developed economically (1mk)

B 1 x 1 = 1mk

1. Give a reason for your answer in (b) above (1mk)

B has a higher per capita income

 1 x 1 = 1mk

1. How can agriculture increase the gross domestic product of a country (1mk)

By creating employment/developing industries/increasing production.

 1 x 1 = 1mk

1. The diagram below illustrate investigation on a property of soil using soil samples labeled J, K and L.
2. Name the property of soil being investigated (1mk)
* Soil capillarity 1 x 1 = 1mk
1. What is the relationship between the soil property above and the size of soil particles? (1mk)
	* The smaller the size of the particles the greater the force of capillarity.

1 x 1 = 1mk

1. Which soil sample would be suitable for growing paddy rice? (1mk)
	* L 1 x 1 = 1mk

1. Give a reason for your answer in (c) above (1mk)
* Has the highest capillarity/has the highest water holding capacity.

1 x 1 = 1mk

1. The following is a list of nutrients: copper, calcium, nitrogen, molybodenum, zinc, phosphorus, carbon, sulphur, iron and magnesium. Which of the above nutrients are;
2. Macro – nutrients (1mk)
	* Calcium, Nitrogen, Phosphorus, Carbon, Sulphur and Magnesium

(Award 1 mark of all the five macro – nutrients are present. Penalize fully if any of the macro – nutrients is missing.

1. Micro – nutrient (1mk)
	* Copper, molybodenum, Zinc and Iron

(Award 1 mark of all the four micro – nutrient are there)

1. Fertilizer elements (1mk)
	* Nitrogen and Phosphorus

(Award 1 mark if the two are present)

1. Liming elements (1mk)
	* Calcium, Magnesium and Sulphur.

(Award 1 mark if the three are present

1. Primary macro nutrients (1mk)
	* Nitrogen and Phosphorus

(Award 1 mark if the two nutrients are presents

**SECTION C**

**Answer any two questions in this section in the spaces provided after question.**

1.
2. Functions of a live fence in a farm. (5mks)
	* Act as windbreak
	* Some are used as a fodder for the livestock e.g tickberry
	* Some may provide edible fruits e.g Kei apple
	* Have aesthetic value
	* Provide security
	* Mark the boundary when planted on a border lines

1 x 5 = 5mks

1. Describe various risks and uncertainties in crop farming (10mks)
* Technology uncertainty – farmers may not be sure of the effective of new production technology
* Price uncertainty – This is due to fluctuation of commodity prices.
* Personal injury or sickness – This may affect the ability of the farmer to work
* Government policy – this may change with time making farmer to incur losses
* Demand for a commodity uncertainty – this results in a loss when market demand is low.
* Yield uncertainty – A farmer cannot accurately project how much to expect
* Pest and disease outbreak – this may lower the yield
* Obsolescence – the farmer may invest in a technology which will become obsolete.
* Natural catastrophes – this include floods, earthquakes, storms etc.
* Labour uncertainty
* Political instability
* Theft of crop
* Fire risk/ownership uncertainty

1 x 10 = 10mks

1. Functions of young farmers clubs in Kenya (5mks)
* Involvement in workshops and seminars related to agriculture.
* Participating in exhibitions and competitions at Ask shows.
* Involvement in agricultural projects at club level.
* Participating in young farmers club annual rallies
* Participate in national ploughing contest.
* Participate in exchange programme
* Participate in national tree planting activities.

1 x 5 = 5mks

1.
2. Factors that should be considered in farm planning (10mks)
* Size of the farm – this determines the number of enterprises possible.
* Environmental factors/climate/soil type – this will determine specific enterprises that are possible in an arta.
* Transport and communication – this ensures produce reach market and inputs are easily accessed.
* Government policy – this ensures that laws are followed.
* Farmer objective and preferences – a farmer will have a sense of ownership of the farm plan for motivation.
* Trend in labour market – This ensures labour availability through the season
* Existing market conditions and price trends – this ensures what is sold is at an appropriate price
* Possible production enterprises – the farmer to choose the most profitable and convenient enterprise.

2 x 5 = 10mks

1. Explain the different ways in which each of the following environmental factors influence crop production.
2. Wind (5mks)
* Strong wind increases the rate of evaporation/evapotranspiration/wilting
* Help in pollination of crops
* Strong winds have a cooling effect which influences rate of physiological processes
* Strong winds may cause lodging/destruction of certain crops.
* Wind can spread diseases/pests
* Used in winnowing/cleaning grains

1 x 5 = 5mks

1. Temperature (5mks)
* It affects quality of certain crops eg. pineapple
* Causes increase in incidences of pests/diseases.
* Low temperature causes frost injury
* Influences distribution of crops
* High temperature increases rate of evapotranspiration hence wilting
* Influences the rate of physiological processes in crop.

1 x 5 = 5mks

1.
2. Information contained in a purchase order. (5mks)
* Quantities of the goods
* Types of good required
* Date of order
* Date within which the ordered goods should be delivered
* Person who orders the goods
* Person who authorized the order
* Cost of goods/each item
* Name of the supplier
* Serial number
* Total amount/cost involved

1 x 5 = 5mks

1. Harvesting of tea (7mks)
* Leaves are picked selectively for the highest quality
* Pluck top two leaves and a bud for fine plucking/three leaves and a bud for coarse plucking
* Use a plucking stick to maintain the plucking table
* Pluck at 5 – 7 days interval in rainy season and 10 – 14 days in a dry period.
* Put the plucked tea in a woven basket to facilitate air circulation/prevent fermentation.
* Do not compress the leaves in this basket to prevent heating up/browning.
* Put plucked tea in cool and shaded place.
* Deliver the plucked tea to the factory same day.

1 x 7 = 7mks

1. Cultural methods of controlling soil erosion (8mks)
* Contour farming – cultivation and planting done across the slope hence in holding water thereby increasing infiltration and reducing run off.
* Mulching covers the soil thereby reducing splash erosion/reduce the speed of run off.
* Strip cropping – alternating strips of crops that give good soil cover with those that give little soil cover controls movement of soil particles hence control soil erosion.
* Vegetated water ways – this slows down run off/trap eroded soil particles thereby preventing soil erosion.
* Afforestation/re-afforestation – trees protect soil from splash erosion by atomizing rain drop/encourage water infiltration/protect soil from wind which could detach and remove soil particles.
* Intercropping – crops which do not cover soil and crops that have good ground cover should be planted together to prevent splash erosion/surface run off.
* Minimum tillage –this maintains good soil structure.
* Cover cropping – this spread over the surface of soil hence protect soil from effects of raindrops.
* Crop rotation – maintains soil cover for protection against soil erosion/improved soil structure.
* Correct spacing – this ensures adequate soil cover.
* Grass strips/filter strips – they are left between cultivated/cropped strips of land to reduce speed of water and filter out trodden soil.
* Agroforestry – this intercepts raindrops/stabilizes soil acts as wind breaks.
* Rotational grazing – this allows grass to recover thus prevent soil erosion.

1 x 8 = 8mks