

**Term 2 - 2024**  
**AGRICULTURE**  
**(MARKING SCHEME PAPER 1)**  
**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
- $\frac{1}{2} \times 4 = 2\text{mks}$
2. 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/conserves water
- $\frac{1}{2} \times 4 = 2\text{mks}$
3. Plant part used for vegetative propagation of each of the following plants.
- (i) Sisal - Bulbils/suckers (½ mk)
  - (ii) Pyrethrum - splits (½ mk)
  - (iii) Sweet potatoes – vine /stem cutting (reject cutting alone) (½ mk)
  - (iv) Sugar cane – setts (½ mk)
4. Cultural ways of controlling couch grass (2mks)
- (i) Mulching
  - (ii) Cover cropping
  - (iii) Crop rotation
  - (iv) Proper spacing
  - (v) Clean seed bed
  - (vi) Flooding
  - (vii) Timely planting
- $\frac{1}{2} \times 4 = 2\text{mks}$
5. Sources of underground water (1½mks)
- Springs
  - Boreholes
  - Wells
- $\frac{1}{2} \times 3 = 1 \frac{1}{2} \text{ mks}$
6. Causes of blossom end of rot in tomatoes (1½mks)
- Irregular watering

- Lack of calcium
  - Excessive use of nitrogen
- $\frac{1}{2} \times 3 = 1 \frac{1}{2}$  mks

7. Qualities of a good green manuring plant (1½mks)

- Hardy
  - Fast growth
  - Ability to rot quickly
  - Highly leafy
  - Leguminous
- $\frac{1}{2} \times 3 = 1 \frac{1}{2}$  mks

8. Reasons for practicing minimum tillage. (2mks)

- Reduce cost of cultivation
  - Control soil erosion
  - Improve soil structure
  - Conserve water
- $\frac{1}{2} \times 4 = 2$  mks

9. Records that should be kept by a poultry farms. (2mks)

- Health records
  - Feeding records
  - Labour records
  - Egg production records
  - Marketing records
  - Inventory records
- $\frac{1}{2} \times 4 = 2$  mks

10. Ways in which pastures are classified (1½mks)

- Pasture stand; pure/mixed stand
  - Pasture establishment; Natural/artificial
  - Ecological zone
- $\frac{1}{2} \times 3 = 1 \frac{1}{2}$  mks

11. 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
- $\frac{1}{2} \times 4 = 2$  mks

12. 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  
 $\frac{1}{2} \times 4 = 2\text{mks}$

13. Beneficial effects of weeds to a farmer. (2mks)

- Some are edible to man
- Some have medicinal value e.g Datura stramonium/thorn apple
- Control soil erosion
- Some provide food to livestock
- Releases humus after decomposition  
 $\frac{1}{2} \times 4 = 2\text{mks}$

14. Advantages of practicing crop rotation. (2mks)

- Maximum use of nutrients
- Control buildup of pests and diseases
- Control weeds
- Improve soil fertility when legumes are included
- Control soil erosion when cover crops are included
- Improves soil structure if grass lay is included  
 $\frac{1}{2} \times 4 = 2\text{mks}$  (reject if underlined word is missing)

15. 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.  
 $\frac{1}{2} \times 4 = 2\text{mks}$

16. 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.**

17. The following illustrations show different production function curves in agricultural economics. Study them and answer the questions which follows;

(a) 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.

(b) 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

(c) Which one of the three production functions curves is rare in Agriculture (1mk)

(i) B 1 x 1 = 1mk

(ii) 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.

18. 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

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

Calculation of per capital income

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

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

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

1 x 2 = 2mks

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

B 1 x 1 = 1mk

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

B has a higher per capita income

1 x 1 = 1mk

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

By creating employment/developing industries/increasing production.

1 x 1 = 1mk

19. The diagram below illustrate investigation on a property of soil using soil samples labeled J, K and L.

- (a) Name the property of soil being investigated (1mk)  
 ✓ Soil capillarity 1 x 1 = 1mk
- (b) 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
- (c) Which soil sample would be suitable for growing paddy rice? (1mk)  
 ✓ L 1 x 1 = 1mk
- (d) Give a reason for your answer in (c) above (1mk)  
 - Has the highest capillarity/has the highest water holding capacity.  
 1 x 1 = 1mk
20. The following is a list of nutrients: copper, calcium, nitrogen, molybdenum, zinc, phosphorus, carbon, sulphur, iron and magnesium. Which of the above nutrients are;
- (a) 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.)
- (b) Micro – nutrient (1mk)  
 ✓ Copper, molybdenum, Zinc and Iron  
 (Award 1 mark of all the four micro – nutrient are there)
- (c) Fertilizer elements (1mk)  
 ✓ Nitrogen and Phosphorus  
 (Award 1 mark if the two are present)
- (d) Liming elements (1mk)  
 ✓ Calcium, Magnesium and Sulphur.  
 (Award 1 mark if the three are present)
- (e) 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.**

- 21.
- (a) 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

(b) 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

(c) 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

22.

(a) 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

(b) Explain the different ways in which each of the following environmental factors influence crop production.

(i) 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

(ii) 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



23.

(a) 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

(b) 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

(c) 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



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