**443/1 AGRICULTURE**

**MARKING SCHEME 2022 TERM 2**

**SECTION A (20 MARKS)**

1. **Differentiate between organic farming and agroforestry (2 mks)**

* Agroforestry – this involves growing of trees and crops and keeping of animals on the same piece of land.
* Organic farming – is the growing of crops and rearing of animals without using agricultural chemicals.

(2x1= 2mks)

(Marks awarded as whole)

1. **Name four types of farm records kept by poultry farmers (2 mks)**

-Production records

- Inventory records

- Breeding records

- Health records

- Marketing records

- Labour records

**(1/2 x 4 = 2mks)**

1. **State three benefits of land title deed to a farmer (11/2mks)**

* They encourage commercial farming as it can secure credit facilities necessary for land development.
* It minimizes land dispute.
* Farmers can achieve high agricultural production
* It enables occupant to lease all or part of land thus get extra income.

**(1/2 x 3= ½mk)**

1. **State two advantages of tractor hire services (1mk)**

* Farmers who cannot afford to buy can get access to it’s services.
* Services are more efficient than hand tools.
* Farmers do not incure cost of service and maintenance.

**(1/2 x2 = 1mk)**

1. **State four factors considered in timing of planting (2mks)**

* Rainfall pattern/moisture condition of the soil.
* Type of crop to be planted.
* Soil type.
* Market demand
* Prevalence of pest and diseases.
* Weed control.

**(1/2 x 4 = 2mks)**

1. **State four reasons of staking in tomatoes (2mks)**

* Production of clean fruits
* Facilitates spraying and harvesting of crops.
* Controls incidences of outbreaks.
* Prevents infestation by soil born pests.

**(1/2 x 4 = 2mks)**

1. **Outline roles of mulching in soil and water conservation (2mks)**

* Prevention of splash erosion
* Increases infiltration
* Reduces evaporation.
* Increases organic matter and water retention capacity.

**(1/2 x 4 = 2mks)**

1. **Give four functions of the Pyrethrum Boards of Kenya (2mks)**

* Offering advisory services to farmers.
* Managing Pyrethrum nurseries which produce planting materials for farmers.
* Processing pyrethrum in the factories.
* Marketing processed products.
* Buying pyrethrum from the farmers.
* Carrying out research to obtain the best cultivators through selecting and breeding.

**(1/2 x 4 = 2mks)**

1. **State four advantages of zero grazing (stall feeding) (2mks)**

* There is quick accumulation of manure.
* Animals make use of the feeds without wastage.
* Animals produce high yields due to less wastage of energy.
* Diseases and parasites are easy to control.
* It requires little land.
* It allows little stocking rate.

**(1/2 x 4 = 2mks)**

1. **Differentiate between Gross Domestic Product (GDP) and Per Capita Income. (2mks)**

* Gross Domestic Product (GDP) – is the total sum goods and services produced by a country within a period one year.
* Per Capita Income – is the average income of citizens of a country.

**(2x1 = 2mks)**

1. **Name three chemicals added to water during the water treatment process. (11/2mks)**

* Soda ash (sodium bicarbonate)
* Alum calcium sulphate)
* Chlorine

**(1/2  x 3 = 1 ½ mks)**

1. **State four characteristics of sandy soil (2mks)**

* Well drained
* Coarse textured
* Moderately fertile
* Slightly acidic
* Low water holding capacity
* Low capillarity

**( ½ x 4 = 2mks)**

1. **State four factors considered when selecting a site for a nursery bed (2mks**)

* Nearness to the water source
* Topography
* Previous cropping
* Security
* Well sheltered place

**(1/2 x 4 = 2mks)**

1. **Give four pieces of information contained in an invoice (2mks)**

* Date of transaction
* Type and quantities of goods delivered
* Price per unit of goods
* Total amount of money involved
* Invoice serial number
* Terms of payment
* People involved in the transaction

**(1/2 x 4 = 2mks)**

1. **State four physical measures of controlling crop pests (2mks)**

* Use of lethal temperatures
* Proper drying of produce
* Flooding
* Suffocation
* Physical destruction of pests
* Use of scarecrows
* Use of physical barriers
* Use of electromagnetic radiation

**SECTION B (20 MARKS)**

1. The diagram below shows various types of soil structure
2. Name the soil structure labeled E and F (2mks)

E – Platy structure

F – Block structure

**(1 x 2) 2mks**

1. State two ways how soil structure influences crop production (2mks)

* Influences soil erosion
* Influences water holding capacity of a soil
* Influences soil drainage

**(1 x 2 = 2mks)**

1. **The diagrams below shows the common weeds on the farm**
2. Identify the weeds labelled G, H, and L (3mks)

G – Mallow / malva verticillata

H – Stinging Nettle / Urtica massaica

L – Striga / witch weed / Striga hermontheca

(1 x 3 = 3mks )

1. How does the weed labeled H affect labour productivity (1mk)

Causes itching reducing work output

**(1 x 1 = 1mk)**

1. The diagram below show a common agronomic practice in agriculture
2. Name the methods of pruning labeled M and N (2mks)

M – Terminal bud pruning / pinching

N – Pollarding / coppicing

1. Name the tool being used in P (1mks)

P – Secateurs

**(1 x 1mks)**

1. Name crops where pruning methods M is applied (1mk)

Tobacco

Tomatoes

Tea

Coffee

**(1 x 1 = 1mks)**

1. The diagram below shows common crop pests
2. Name the pest labeled T2 and T3 (2mks)

T2 – Sudan Dioch / Quelea quelea aethiopica

T3 – Mouse bird

**(1 x 2 = 2mks)**

1. State one damage caused by pest labeled T1  (1mk)

* Unearth and eat sown seeds
* Dig up and eat roots and tubers
* Climb up maize, stalk to eat grains

1. **State two effectives methods used to control the pest labeled T2  (1mk)**

* Use of explosives
* Goose necked sorghum varieties
* Poisoning

**(1 x 1 = 1mk)**

1. **The diagram below shows a practice carried out in agroforestry**
2. Name the practice (1mk)

Root pruning

**(1 x 1 = 1mk)**

1. **State two benefits of the above named practice (2mks)**

* Encourages the development of a short dense and strong rooting system.
* Lifting of seedlings is made easier
* Faster seedlings establishment after transplanting

**(1 x 2 -= 2mks)**

1. **State one advantage of raising seedlings in polythene sleeves (1mk)**

* No root disturbance during transplanting
* Easy to transport
* Transplanting can be delayed

**(1 x 1 = 1mk)**

1. **(a) State and explain four methods of fertilizer application (8mks)**

* **Broadcasting –** Random scattering of fertilizers on the ground for plant use.
* **Placement method** – Application of fertilizer in planting holes or drills
* **Side dressing –** Placing of nitrogenous fertilizers at the side of the crop being top dressed
* **Foliar spraying –** Application of formulated fertilizer solution onto the foliage / leaves of the crop
* **Drip –** Fertilizer dissolved and applied to individual plants through perforated pipes or bottles

**Stating 1 x 4 = 4mks**

**Explanation 1 x 4 = 4mks**

1. **Outline the advantages of row planting**

* Machines can be used easily between the rows
* Easy to determine correct plant population
* Lower seed rate used than in broadcasting
* Cultural practices eg weeding, spraying, harvesting are easily carried out

(1 x 4 = 4mks)

1. **State and explain the importance of crop rotation (8mks)**

* Maximum utilization of nutrients – shallow rooted crops utilize nutrients in top soil profile while deep rooted utilize nutrients in lower soil horizons / different crops have different nutrient requirements eg cassava weeds more potassium while maize requires more nitrogen.
* Control of soil borne pests and disease build up – crop pests and diseases are crop specific hence crop rotation helps break the life cycles of crop pests and diseases
* Control weeds – parasitic weeds ( striga) are controlled by planting non-grass crops
* Improvement of soil structure – growing of grass minimize the disturbance of the soil hence improving soil structure (Grass ley)
* Control of soil erosion – cover crops eg sweet potatoes avoid empty spaces hence soil protected from agents of soil erosin
* Improvement of soil fertility – Leguminous crops helps in fixation of nitrogen hence improved soil fertility

**Stating 1 x 4 = 4mks**

**Explanation 1 x 4 =4mks**

1. **(a) State and explain four factors influencing soil erosion (8mks)**

* The amount / intensity of rainfall – Area that receive high amounts of rainfall / intensity are more prone to erosion than areas with low amount/ intensity of rainfall.
* Slope of the land / Topography – The steeper the slope the greater the speed of water hence more soil erosion
* The type of soil – Sandy soils are easily eradable compared to clay which is more resistant to erosion.
* Clean weeding – Soil is left bare and exposed to soil erosion agents
* Indiscriminate burning of vegetation before cultivation – The land is left exposed to the erosive forces of rain and wind.
* Planting annual crops on steep slopes – leads to frequent cultivation hence exposure of soil to erosion.
* Deforestation – cutting of trees exposes the soil to soil/ erosion agents
* Overstocking – Leads to overgrazing hence soil left bare and susceptible to erosion by wind or water
* Vegetation cover – Vegetation on a soil surface acts as a barrier and reduces the impact of rain drops
* Soil depth – shallow soils become saturated with water very quickly and are easily eroded.
* Ploughing up and down the slope – Encourages easy water flow down the slow hence soil erosion

**Stating 1 x 4 = 4mks**

**Explanation 1 x 4 =4mks**

**(first four)**

**(b) Outline the roles of trees in soil and water conservation (4mks)**

* They protect the soil below from rain drop erosion by reducing the force with which it falls onto the ground
* They provide shade hence reduce loss of moisture through evaporation.
* They act as windbreaks
* The roots of trees bird soil practices together
* They reduce the speed of running water thus reducing its erosive power
* Their leaves decay to supply humus to the soil which improves the infiltration rate of the soil.

**(1 x 4 = 4mks)**

**( c) Outline the advantages of using herbicides in weed control (8mks)**

* Herbicides are effective in controlling bothersome weeds such as couch grass, sedges.
* Herbicide use requires less labour than mechanical cultivation
* Herbicides do not disturb crop roots and other underground structures
* Herbicides make the control of weeds in certain crops easier eg carrots, wheat, barley.
* Cheaper in the long run than using manual or mechanical cultivation
* Herbicides are efficient in both wet and dry conditions unlike mechanical cultivation
* Herbicide use is more convenient in crops such as sugarcane, sisal and controlling weeds such as stinging nettle and double thorn
* Herbicide application helps to maintain the soil structure / helps achieve minimum tillage

**(1 x 8 = 8 mks)**

1. **(a) State the reasons for carrying out minimum tillage (6mks)**

* To reduce the cost of cultivation or ploughing by reducing the number of operations
* To control soil erosion. Mulching and cover cropping greatly reduce chances of soil erosion
* To maintain soil structure. Continuous cultivation destroys soil structure hence it is avoided
* To conserve moisture. Continuous cultivation exposes the soil to heat of the sun thus enhancing evaporation of available moisture.
* To prevent the disturbance of the roots and underground structures.
* To prevent the exposure of humus to adverse conditions.

**(1 x 6 = 6mks)**

**(b) Outline the reasons why farm budgeting is important (6mks)**

* Helps the farmer in decision making. Good budget helps a farmer to avoid over expenditure and impulse buying.
* Enables the farmer to predict future returns hence the farmer plans ahead.
* Helps the farmer to avoid incurring losses by investing in less profitable enterprises.
* They enable farmers to secure loans from financial institutions eg AFC
* Ensures a period analysis of the farm business
* It acts as a record which can be used for future reference.
* It pinpoint efficiency or weakness in farm operations

**(1x6 = 6mks)**

1. **State and explain four factors influencing the supply of a commodity (8mks)**

* Number of sellers in the market - The higher the number of sellers the higher the supply of a commodity
* Price of related good - If the price of related good increases the supply of the other good will increase
* Price expectation - If the future price retains or increase the supply will low.
* Technology – The higher technology the higher the supply.
* Weather – If the weather is favourable the supply is high eg vegetable and if its unfavarouble the supply is low.
* Government policy – Unfavourable government policy will reduce the supply.
* Changes in prices – An increase in price leads to increase in supply. Reduction in price leads to low supply.
* Cost of production - The increase in cost of production leads to low supply.
* Increase in the supply of associated good. This lades to increase of supply of the other products.
* Transportation system – Improved and efficient transport increases supply

**Stating 1 x 4 = 4mks**

**Explanation 1 x 4 = 4mks**

**First four**