**MARKING SCHEME**



**EAGLE II JOINT EXAMINATION- 2021**

**AGRICULTURE**

**PAPER 1**

**MARKING SCHEME**

1. Give two ways in which agriculture is termed as an Art (1Mk)
* **Tilling**
* **Measuring distance**
* **Harvesting crop**
* **Feeding / handling animals**
1. State main characteristics of plantation farming (1Mk)
* **Growing of one type of crops on same piece of land**
1. State two policies that regulate the amount of imported agriculture goods (2Mks)
* **Heavy taxation of imports to protect local industries**
* **Conservation of natural resources**
* **Subsidy of locally producted commodities**
* **Quality control / control to disease parasites**
1. List four factors that determine the kind of soil farmed in an area (2Mks)
* **Parent rock material**
* **Climate**
* **Topography**
* **Time**
1. State three factors which determine the depth of ploughing (1½Mks)
* **Type of crop to planted**
* **Implements available**
* **Type of soil**
1. Outline four advantages of overhead irrigation over surface irrigation (2Mks)
* **Water evenly distributed over required area**
* **Practiced on slopy ground**
* **Less water wastage**
* **Sprinklers can be move from a point to another**
1. List four pieces of information contained in health record (2Mks)
* **Disease symptom**
* **Date**
* **Treatment given /cost**
* **Animal affected**
1. State two functions of sulphur in plant growth (1Mk)
* **For formation of protein and plant hormone**
* **Influences physiological process e.g protein synthesis**
* **Needed for formation and activation of certain enzymes e.g co-enzyme A**
1. State two characteristics of potassic fertilizers (2Mks)
* **Moderate scorching effect**
* **Moderate solubility to water**
1. a) State two disadvantage of state ownership of land tenures system (2Mks)
* **Operate in non- competitive market thus may result low quality production**
* **Workers involved don’t have as much motivation**

b) Write down three objectives of settlement and resettlement to Kenya after independence (3Mks)

* **To ease population pressure**
* **To increase agricultural production**
* **To create employment**
* **To form some kind of tsetsefly consolidated barrier**
1. State four modes of classification of crop pests (2Mks)
* **Level of damage**
* **Crop attacked**
* **Mode of feeding**
* **Scientific classification**
* **Stage of development**
* **Stage of growth of crop attacked**
1. State two advantages of strip grazing (2Mks)
* **Use of high quality pastures**
* **Proper utilization of pasture as livestock are restricted to portion**
* **Manure evenly distributed**
1. Define the following as used in soil conservation (1Mk)
2. Solifluction erosion
* **The gravitational flow of surface materials saturated with water**
1. List four factors influencing mass wasting (2Mks)
* **Slope of land**
* **Climate**
* **Vegetation cover**
* **Human activities**
* **Nature of material**
1. State two damages caused by nematodes on crops (2Mks)
* **Inject toxin to the plant tissues**
* **Causes wounds / to plant thus secondary infection**
* **Some feed an plant roots**
1. List three crop diseases caused by bacteria ( 1½ Mk)
* **Blight (bacterial)**
* **Wilt**
* **Black arm of cotton**
* **Halo blight of beans**

**SECTION B ( 20 MARKS)**

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

1. The experiment below was set to compare pore sits and water holding capacity of three different types of soils sample.

Sample Y

Sample X

Sample Z

Sample water

1. Identify the soil in each of the following funnels labeled (1½ Mk)
* **X – Loam**
* **Y – Sand**
* **Z – Clay (3 x ½ = 1½mks)**
1. Which of the soil sample can be said to have the highest porosity rate? ( ½Mks)
* **Soil Y**
1. Give reasons for your answers in (ii) above ( ½ Mk)
* **It has drained the highest amount of water as opposed to others.**
1. Which of soil sample would be suitable for planting paddy rice? (1Mk)
* **Soil Z / Clay soil**
1. Explain your answer in (iv) above (1Mk)
* **It is not easily drained / does not loose water easily when flooded for rice production.**
1. The diagram below represents two ways in which a crop was proved. Study them and answer the questions that follow



1. Which diagram represented the correct way of pruning (1Mk)
* **correct pruning E**
1. Give a reason for your answer in (i) above (1Mk)
* **reason -slant cut is a few centimeters above the bud /leaf**

b) State two ways in which pruning assists in controlling diseases (2Mks)

* **it limits transmission of disease**
* **remove diseased parts**
* **facilitates penetration of chemicals**
* **Creates favourable conditions for the diseases.**
1. Outline three reasons for pruning coffee (3Mks)
* **Regulates bearing**
* **remove old unproductive branches**
* **makes harvesting easy**
* **economizes on the chemicals**
1. Below are diagrams of common weeds found in crop field, study them carefully and answer the questions that follows:-

F G H

1. Identify the weeds (3Mks)

**F - Couch grass**

**G- Black jack**

**H**- **Wondering jew**

1. Why is it difficult to control weed labelled F? (1Mk)
* **Have ability to propagate vegetative.**
1. Classify weed G based on plant morphology (1Mk)
* **Broad – leaved weed**
1. State importance of weeds labeled G and H (2Mks)
* **G- livestock feed**
* **H- used as food (edible by both man and livestock**

**SECTION C (40MARKS)**

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

1. a) Describe the effects of diseases on tomatoes in the field (5Mks)
* **Leads to high cost of management**
* **Caused rotting of fruits**
* **Leads to drying up of crops or withering**
* **Leads to premature falling of fruits**
* **Leads to low quality of crops**
* **Stunted growth**

1. Describe the procedure of harvesting coffee (4Mks)
* **Harvesting is done by hand picking. Only two rid rope berries should be picked.**
* **After harvesting, they are spread out on sisal bags to sort out any unripe, diseases, over –ripe and dry berries as well as those that are small.**
* **The diseased and overiped berries are delivered to the factory at the same time with two good quality cherries packed separately where they are treated as grade two cherries.**
* **The green dry and undersized berries are dried at home and taken to the factory at two end of harvesting season.**
1. Explain the precautions observed during harvesting of cotton (4Mks)
* **Sisal bags/gunning bags should not be used to prevent mixing of lint and sisal fibres which causes giving problems.**
* **Hands should be cleaned to avoid staining of the lint, picking should be done when the hint is dry to prevent fibres from sticking together**
* **Use clean containers for picking to avoid contamination**
* **Use different containers for AR (Safi) and BR (fifi) gardens of cottons to ensure quality/separate grades A & B**
* **Avoid picking leaves and twigs to avoid contamination.**
1. Explain seven factors that contribute to competitive ability of weeds (7Mks)
* **Ability to produce large quantities of seeds, for example, pigweed and blackjack.**
* **Weed seeds remain viable in the soil for a long time waiting conducive germination conditions.**
* **Most weed seeds are easily and successfully dispersed, for example, fleabane (*Conyza Spp.)* seed have well developed structures that are useful in wind dispersal.**
* **Some seeds have ability to propagate vegetatively, for example, couch grass and wandering jew.**
* **Elaborate or extensive root system useful in supporting the plant, in nutrient absorption and water uptake.**
* **Ability to survive even where there is limited nutrient supply**
* **Short life cycle, that is, if the rain regime is restricted the plant is able to complete its life cycle.**
1. a) Describe the production of maize for grain production under the following sub-heading
2. Four varieties common in Kenya (2Mks)
* **Katumani variety**
* **Primophus methyl**
* **Simba variety**
* **Duma variety**
* **DK 8051**
1. Seedbed preparation (3Mks)
* **The land is cleared removing vegetation cover or previous plant stalks.**
* **The land is ploughed during dry spell to dry the weeds, kill life cycle of pests and diseases and incorporate the organic matter into soil.**
* **The land is harrowed to obtain medium tilth required for maize seeds.**
1. Field practices (5Mks)
* **Planting: Place two seeds per hole at 75cm x30cm apart. Use DAP at 150kg/ha.**
* **Weed control: The weeds are controlled as soon as they emerge by uprooting, slashing or chemicals that are selective to maize crop.**
* **fertilizer application: This is done at knee high for maximum utilization of the nutrients. Top dress with nitrogenous fertilizer e.g. CAN at 200kg/ha.**
* **Mulching: Place dry plant stalks or banana leaves between the crops to conserve moisture and smoother the weeds.**
* **Harvesting: harvest the crops when the cobs start turning downwards. This is done 4 – 5 months after planting depending on the variety planted.**
* **Pests disease control**

b) State and explain five cultural methods used to control weeds (5Mks)

* **Uprooting:- This is done when weeds are scattered in the field.**
* **Mulching: - Dry banana leaves, plant stalks or grass spread in the field between crops to smoother the weeds.**
* **Crop rotation- controls weeds specific to certain crops.**
* **Flooding of the land – water chocks some weeds.**
* **Use of clean planting materials**
* **Proper spacing**
* **Clean seed bed**
* **Cover cropping**
* **Timely planting**

c) State five effects of late defoliation of forage crops (5Mks)

* **It has low dry matter digestibility**
* **It has low leaf : stem ratio**
* **It has low crude protein content**
* **It has high cellulose content hence it is**
* **Woody and fibrous**
* **Forage has high DM content hence high DM yield**

21. a) State and explain five ways in which human factors influence agriculture(5Mks)

* **Level of education and technology:- Educated farmers chooses the correct input such as fertilizer and pesticide to be used and reads the users manual copy for the correct application.**
* **Government policy: - The government regulate the tax paid when selling the agricultural commodities which influences the income of the farmers when the taxes are high and favourable when tax is low.**
* **Health HIV/AIDS:- Healthy people have vigor and high motivation to produce high agricultural commodities as HIV/AIDS leads to labour decrease and lack of motivation in agriculture.**
* **Transport and communication: Agricultural goods requires efficient transportation from areas of production to processing areas and the need to access the wide market through efficient and flexible communication network.**
* **Market forces:- the demand and supply of the agricultural commodities influence the income of farmers as high demand leads to increase in price of commodities leading to high income and the reverse in high supply.**
* **Cultural practices**

(b) Describe the preparation of compost manure using indore method (pit method) (9Mks)

* **Select the best site free from water logging (well drained).**
* **Remove the vegetation cover and peg the area of 1.5m by 1.5m.**
* **Dig the pegged area 1.5m deep. These holes (pits) should be four in numbers.**
* **Place the maize stalk residue in the pit first to be at the bottom.**
* **Follow it with animal refuse such as animal refuse such as animals droppings like cow dung, chicken waste and plant residues from leguminous crops.**
* **Place a layer of manure on this layer to provide nutrients to decomposing bacteria.**
* **The layer of manure is followed with a layer of ash to regulate the toxic level of the compost.**
* **Top soil is placed on this layer to introduce the micro-organisms responsible for decomposing the compost manure**
* **Dry leaves are spread on the top to prevent it from excessive evaporation of moisture**
* **A wooden stick is sued to detect the temperature of the compost and water added during high temperature.**
* **After three months of internal the compost manure is transferred into the next pit where the 1st and the third pit is moved to the second pit and thereafter 2nd pit moved into the forth pit, then to the field.**

(c) State and explain how soil loses soil fertility. (6Mks)

* **Leaching : The nutrients on the upper surface is earned by water into the deeper layers during flooding.**
* **Soil erosion:- the nutrients on the soil surface is carried away by the surface run-off to areas where if is not in use.**
* **Monocropping: This leads to utilization of certain nutrients by plants (crops)\_ that are often grown resulting into depletion of these nutrients to crops.**
* **Ionic toxicity – Accumulation of some ions e.g. Aluminum ions renders some nutrients unavailable in the crops**
* **Volatization of crop nutrients by the sun.**