**SUKELLEMO MOCK 2020**

**443/1**

**AGRICULTURE**

**PAPER 1**

**2 HOURS**

**MARKING SCHEME**

**SECTION A (30MKS)**

1. State two reasons of planting sweet potatoes on ridges.(1mk)

Encourage tuber expansion

Allow easy harvestingof roots

2. Differentiate between rouging and field hygiene as used in crop production.(1mk)

Rouging isuprooting and destroying infected plants.

Field hygiene-keeping the farm free from pests and diseases./pathogen free farm.

3. Calculate the amount of N in 670kg of a compound fertilizer 20:15:10. (2mks)

20/100 x 100= 20kg in 100kg bag

So in 670 /100 x 20=134kg

4. State four farming practices that encourage soil erosion. (2mks)

Cultivating down the slope. N

Deforestration

Contionuos cropping

Overcultivation

Monocropping especially crops that require fine tilth

5. Give two examples of working capital in bean production.(1mk)

Fertilizer

Pesticides

Herbicides

Fuel

6.a)differentiate between a delivery note and purchase order documents.( 1mk)

Delivery note –is a financial document that accompanies goods on delivery. Evident that goods have beenphysically deliverd from supplier to the buyer.

7.a) state four factors that are considered when siting a composite pit.(2mks)

Drainage – the place should be well drained , avoidwater logged areas toprevent leaching of nutrients.

Direction of prevaioling wind- should be away from homestead to prevent bad odour.

Accessibility – the place should be accessible for easy transport of the manure.

Size of the farm – it should be centarly placed.

8. Write down three pieces of information that should be written on the envelope bearing the composite sample being taken to the national laboratories of Kenya. ( 1.5mks)

name of the farmer

address of the farmer

field number

location of the farm

date of sampling

9. Why should a farmer understand the lifecycle of parasites?(1mk)

To know the most destructive stage –hence control the parasite the right stage .

10. Give two pests which attack carrots.(2mks)

Green aphids, wireworms, vegetable worms.

11. Give four factors that affect the selectivity and effectiveness of herbicides.(2mks)

Stage of plant growth

Plant morphology

Herbicide characteristics,method of application

Concentration,Formulation

12. What is pricking out? ( 1 mks)

Uprooting seedlings in a overcrowded nursery bed and transferring them to a seedling bed.

13. State two physical characteristics used in classifying soil. (1mk)

 Soil structure, soil texture, soil colour.

14.Give three reasons why the million acre scheme was started.( 1.5mks)

To maintain production levels

Solve unemployment problems

Transfer land from the white settlers.

Reduce population pressure in Africans reserves

To settle former employees of of European farmers and squtters.

To earn foreign exchange from sale of cash crops.

Increase agricultural production, through better methods of land utilization.

15. Name four micro catchments aimed at conserving soil water around crops (2mks)

A. There are three basic types of microcatchment systems: contour bench terraces, runoff strips and micro-watersheds.

Negarims

16. State three importance of sub-soiling (1 1/2 marks)

Helps facilitatesoil aeration

Break soil hard pan

Bring to the surface minerals which may have been leached in the deeper layers.

Facilite proper water infiltration.

17. Name three tools a farmer can use to dig a virgin land (1 1/2marks)

fork jembe

jembe

pick axe

mattock

18. Give two forms in which credit is offered to farmers.(1mk)

Money

 Inputs- item eg a cow, a tractor, fertilizer.

19. Four roles of phosphorus.

Root development.

Strengthens plant plant stems, poreventing lodging.

Essential for flowering

Plays an important role in metabolic processeswhich include respiration,protein and carbohydrate synthesis

**SECTION B (20 MARKS)**

20. (I) Name the farming practice illustrated above.(1marks)

Chitting/ sprouting/shooting/ breaking dormacyn in potato setts.

 (ii) State the procedure followed to carry out the practice you have named in (i) above (4marks)

-. Potato setts of about 3-6cm in diameter are selected.

-look for a partially darkened room.

- Arrange the potato setts in layers of 2or 3 tubers with the rose-end facing upwards and heel end downwards.

- Diffused light is then passed through.

 (iii) state the importance of the carrying out the farming practice. (1 mark)

Leads to sprouting of the potato setts hence grow/ mature faster when grown in the seed bed

Gives them a head start.

21.(i) Name the biological control measure of soil shown above. (1 marks)

 Countour farming

 (ii) In what kind of topography is the soil control measure practiced?(1mk)

 Gentle slope.

 ( iii) Name four other biological control measures of soil apart from the one named in (i) above.(2marks)

Grass strips/ filter strips, cover cropping, mulching,

 cropping systems –like rotational grazing, crop rotation correct spacing, intercropping, ridges/ furrows along contours.

Strip cropping, grassed or vegetated water ways, afforestration/ reafforestration

Agroforestry.

 22. A Farmer has a piece of land on which he grows beans . His farm record on bean production for nine years is shown below.

|  |  |  |
| --- | --- | --- |
| YEAR | FERTILIZER APPLIED (100KG BAGS) | TOTAL OUTPUT OF BEANS (90KG BAGS) |
| 2011 | 0 | 6 |
| 2012 | 2 | 12 |
| 2013 | 4 | 30 |
| 2014 | 6 | 44 |
| 2015 | 8 | 54 |
| 2016 | 10 | 62 |
| 2017 | 12 | 68 |
| 2018 | 14 | 68 |
| 2019 | 16 | 66 |

a) Using an appropreiate scale draw a graph to show the relationship between inputs and outputs.(5mks)

 

 b) calculate the farmers marginal product for the year 2013.(1mk)

 30-12 =18bags

c) From the data given , what rate of fertilizer application would the farmer choose if he wanted to grow maize in 2020? (1mk)

 12 bags of fertilizer.

d) Give an explanation for your choice above.

When he applied 12 bags of fertilizer the yields were at the high( 68 bags)

e) calculate the average product for the year 2015.( 2mks)

average product = total yield / number of units of input.

 = 54/4=13.5

**SECTION C (40 MARKS)**

**SECTION C**

 **23. Advantages of land consolidation**

 ( i) weed, pest and diseases control are enhanced.

 (ii)economic use of time

 (iii) proper supervision of land

 (iv)if the land is already registered, it gives the farmer legal ownership and the title deed which can be used to obtain loans.

 (v) soil conservation and land improvement. it facilitates carrying out of soil conservation practices as well as farm mechanization, since the holding are enlarged

 (vi)sound farm planning and adoption of crop rotation programs

 (vii)Construction of permanent structures such as fencing and buildings.

 (viii)economical operation of activities on the land since it gives the farmer a large single unit of land.

 (ix) agricultural advice by the extension officer.

 x) saving of transportation cost.

 max (7x1=7 mks)

**24.(b) discuss the factors that will influence mass wasting or solifluction**

 (i) the nature of material- if it contains a lot of water faster movement of materials

(ii) the slope of land – on steep slopes materials move faster

(iii) climate – heavy rainfall areas materials get too wet hance easy moved

iv)vegetation cover – solifluction is easy and faster in bare land.

v)Human activities building , quarrying, deforestration initiate mass wasting and movement of materials.

**vi) Forces within the earths crust** - tremors , volcanic eruptions cause wide spread movement of materials, ( any 5x1=5mks)

 **25. (c) discuss four agents of weathering**

Wind – carry materials which knock each other thus breaking off into small pieces moving ice glacier- as it moves it has a grinding effect water when it rains, the raindrops hit the ground with some force a dislodges the soil.

Temperature -- high temperature causes expansion of rocks while low temperatures cause contraction of rocks the axpansion and contraction of the rocks lead to breakage.

 Rainfall of high intensity erodes soil surfaces temperature – when water gets into the rock cracks it freezes and becomes ice increasing volume, exerting pressure on the rock then dislodges particles . (4 x2=8mks)

**23.(a)discuss methods of harvesting agroforestry trees. 10mks)**

(i) pruning - removal of branches from the lower part of the tree crown. Reduce shade and improve the quality of the trunk. Branches removed through pruning are used as fodder and as a source of fuel. Done towards the end of dry season to avoid damage to other crops

(ii) lopping – removal of branches of trees in a haphazard manner.

(III)pollarding – cutting of all the branches and top part of a tree. it provides fodder and wood for fuel and other uses

(iv) coppicing – cutting of the whole tree abut 30 cm above the ground new growth sprout from the tree stump provide fodder, wood and mulching materials

(v) thinning -cutting down of some tress to avoid overcrowding fuel wood, poles and fodder common practice in woods lots. (10x1= 10mks)

**23.(b) explain how trees with good characteristics can be grafted**

1. you cut the upper part of the tree .

2. a scion is taken from another tree that is compatible to it.

 3. depending on the method of grafting the scion is cut to the required shape.( if the roots stock is of a larger diameter side grafting is done.)

4. make a cut on the root stock & inserts the scion.

5. tie them with a polythene tape (5x1=5mks)

23.(c) discuss five benefits of weeds to the farmer

i)some weeds have medicinal value.eg Sodom apple.

ii) leguminous weeds fix nitrogen in the soil.

iii)some weeds are edible to both man and livestock. Eg pig weed.

iv) weeds act as soil cover prevent erosion.

v)weeds add organic matter into the soilwhen the y decay.

24.(a)Discuss four aspects of rainfall that a famer should consider when deciding what crop to grow in an area

 (i) Rainfall Reliability - Dependency on the meteorological timing of the ones of rainfall. Determines the times of land preparation and planting.

 (ii) Amount of rainfall is the quantity of rain (precipitation) that falls in a given area within a given year and is measured in millimeters / year. it determines the type of crop to be grown.

 (iii) Rainfall distribution – refers to the number of wet months in year. Determines the choice of crop varieties grown in a given area

 (iv) Rainfall intensity – amount of rain that in an area within a period of one hour and is measured in millimeters (mm) per hour. rainfall of high intensity damage crops and causes soil erosion .

(3x2=6mks)

24(b) Discuss carrots under the following sub heading

**(i)varieties** – fresh market variet-- chantenary,

canning variety such as Nantes.

 Livestock variety -Oxhart variety.

(3x1=3mks)

**(iii)filed management practices** –

(a)thinning – two weeks after germination carrot should be thinning to prevent competition for light, moisture and space

(b)weeding – by uprooting to prevent competition

(c) earthing up – to encourage root expansion

(d) topdressing – using nitrogenous fertilizers

(e) irrigation – when dry to provide sufficient moisture

(d) control of pests ­– by use of appropriate pesticides

 (any 2 explained points ..2x1= 2mks)

**(iii) harvesting** – Carrots are ready three to five months after planting depending on the variety .

- harvested by lifting the plants out of the ground using a fork jambe or uprooted manually

(2x1=2mks)

(c)use the information below to Answ erquestion sthat follow. Johns farm for the year ended 31st December 2019.

 Closing valuation 240,000/=

 Debts payable 115,000/=

 Animal feed purchase 100,000/=

 Sale of 2 heifers 180,000/=

 Debts receivable 130,000/=

 Wages 80,000/=

 Opening valuation 220,000/=

 Milk sales 62,000/=

 Veterinary bills 57,000/=

 i) prepare a profit and loss account of Johns farm.( 5mks)

ii) what is the percentage profit or loss made by the farm? (1mk)

iii)of what use the profit and loss account to the farmer? ( 1mk)

|  |
| --- |
|  THE PROFIT AND LOSS ACCOUNTOF JOHNS FARM FOR THE YEAR ENDED 31ST DECEMBERs 2019. 1/2mks |

|  |  |
| --- | --- |
| EXPENDITURE | INCOME 1/2mks |
| **opening valuation** SHS CTS  | SALES AND RECEIPTS SHS CTS |
| Opening valuation 220,000 00 | Sale of heifer 180,000 00 |
|  | Debts receivable 130,000 00 |
|  | Sale of milk 62,000 00 |
|  | Total sales and receipts= **372,000 00** |
| **Purchases and expenses** SHS CTS | **Closing valuation** shs cts |

|  |
| --- |
|  |

|  |  |
| --- | --- |
| Debts payable 115,000 00 | Closing valuation 240,000 00 |
| Animal feed 100,00 00 |  |
| Wages 80,000 00 |  |
| Veterinary bills 57,000 00 |  |
|  Total purchases &expense **352,000 00**  |  |
| Total of all expenditure **572,000 00**  | Total of **income 612,000 00** |
| Profit 40,000 00 |  |
|  |  |

 (10 x1/2= 5mks)

b) percentage profit= 40,000/612,000 x100= 6.536 % 1mk

c) it shows whether a farmer is making profit or loss in the farming business. 1mk