

Name..... Adm no.....

School: Signature

443/1

Date

AGRICULTURE

July/August 2022

2 Hours

Kenya Certificate of Secondary Education

AGRICULTURE

Paper 1

2 Hours

Instructions to candidates

- a) Write your name and Adm number in the spaces provided above.
- b) Sign and write the date of examination in the spaces provided above.
- c) This paper consists of **three** section; **A, B and C**
- d) Answer **all** questions in section **A** and **B** in the spaces provided.
- e) In section **C** answer any **two** question in the spaces provided after question 25
- f) **This paper consists of 11 printed pages.**
- g) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
- h) **Candidates should answer all the questions in English**

Examiners use only

Section	Question	Maximum marks	Candidates score
A	1-17	30	
B	18-21	20	
C		20	
	Total score	20	
		90	

Answer all questions in this section in the spaces provided after each question.

1. Name **three** categories of livestock farming (1½Mks)
Poultry keeping
Mammalian livestock keeping
Apiculture
Aquaculture
2. State **three** advantages of carrying out ranching (1½Mks)
Make use of marginal areas
Higher production than nomadic pastoralism
Source of employment
Source of income for people in marginal areas
3. Give **four** activities undertaken in organic farming. (2 Mks)
Rearing livestock in natural pastures
Using organic manures
Using organic based pesticides
Practicing biological pest, weeds and parasite control
Practicing cultural methods of pest, weeds and parasite control
4. State **three** objectives of land redistribution (1½Mks)
To ease population pressure
To increase agricultural production
Create employment
Form tsetse fly consolidated barrier
5. List **four** parameters of measuring national economic development of a country. (2 Mks)
National income
Per capita income
Level of technology
Literacy level
Gender parity

6. Give **two** roles of soil micro-organisms that are beneficial to crops. (1 Mk)
Decomposition/ turning decaying matter to nutrients
Fixing of atmospheric nitrogen in the soil
7. List **three** aspects of light that influence crop growth. (1¹/₂Mks)
Light quality
Light wavelength
Light intensity
8. Give **three** ways of land acquisition for use (1¹/₂Mks)
Inheritance
Buying/leasing
Donation
Settlement by government
Compensation
9. Give **two** reasons why land preparation should be done early. (1 Mk)
Plants make use of nitrogen present at the beginning of the rainy season
Escape serious pest attack
Escape pest attack
Reach market early to fetch good prices
10. List **four** factors of production. (2 Mks)
Land Labour
Capital
Management
11. List **three** methods of treating water for use on the farm. (1¹/₂Mks)
Chemical method
Boiling
Decantation
Filtration
Leaving it open in the sunshine to (remove odour and kill bilharzias worms)
12. State **four** advantages of drip irrigation (2 Mks)

Can be used in any topography

Uses less water

Does not cause fungal disease

Fertigation is possible

13. Give four advantages of seeds in crop establishment (2 Mks)

Portable

Variations occur when used

Can be stored for a long period of time

Easy to handle when planting

Possible to apply with fertilizers and manures

Seeds are easy to treat against soil borne pests and diseases

14. State **four** characteristics that make a crop suitable for green manuring. (2 Mks)

Highly vegetative

Leguminous

Can grow in poor soils

Can rot easily

Fast growing

15. Name **two** types of production functions in economics (1 Mk)

Increasing returns production function

Decreasing production function

Constant production function

16. Give **four** effects of mass wasting (2 Mks)

Loss of soil fertility

Creation of lakes

Damaging of property

Soil erosion

Permanent scars on the landscape

Tourist attraction

17. Distinguish between oversowing and undersowing in forage establishment. (2 Mks)

oversowing is establishment of legume pastures on existing pastures while undersowing is establishment of a pasture crop under a nurse crop

18. Give **four** advantages of stall feeding (2 Mks)

Fast accumulation of manure

High milk production

Easy control of parasites and diseases

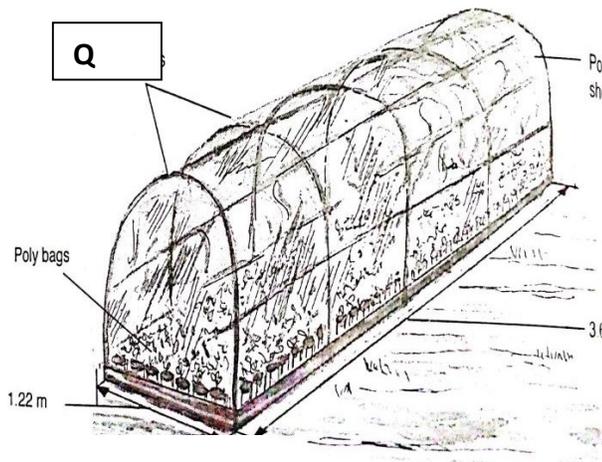
Requires little land

Make good uses of feeds without wastage

Section B (20 Marks)

Answer all questions in this section in the spaces provided after each question.

19. The diagram below illustrates a structure that is used in raising up seedlings study it carefully to answer the questions below it.



- a) Identify the structure (1 Mk)

Vegetative propagation nursery

- b) Name the part labeled Q (1mk)

Wooden hoops

- c) state three management practices carried out on the seedlings in structure above

(3mks)

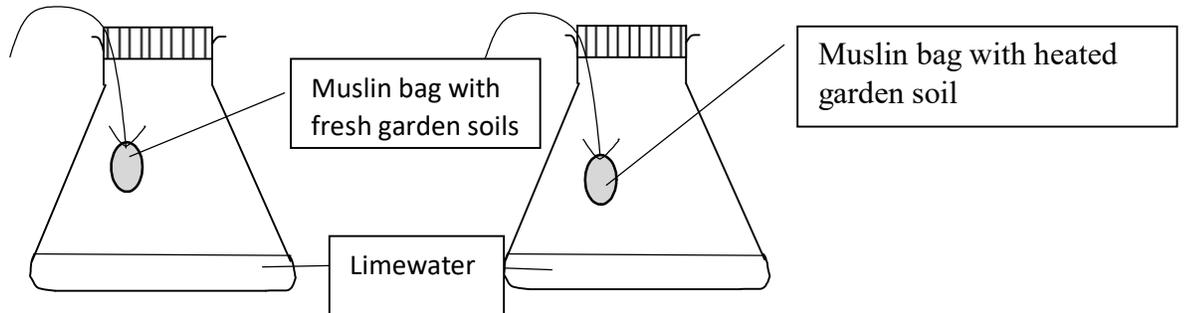
Watering

Weeding

Pest and disease control

Hardening off

20. The experimental set up below was done by form 1 students while investigating a certain component of soil. Study it to answer the questions that follow.



a) Name the soil constituent they were investigating. (1 Mk)

Soil living organisms

b) Suggest the observations made in set ups **A** and **B**. (2 Mks)

A. Lime water turn to a white ppt

B: no change in the lime water

c) Give a reason for your observations in A and B above. (2 Mks)

· Living organisms respire producing carbon iv oxide which reacts with lime water to form the white ppt.

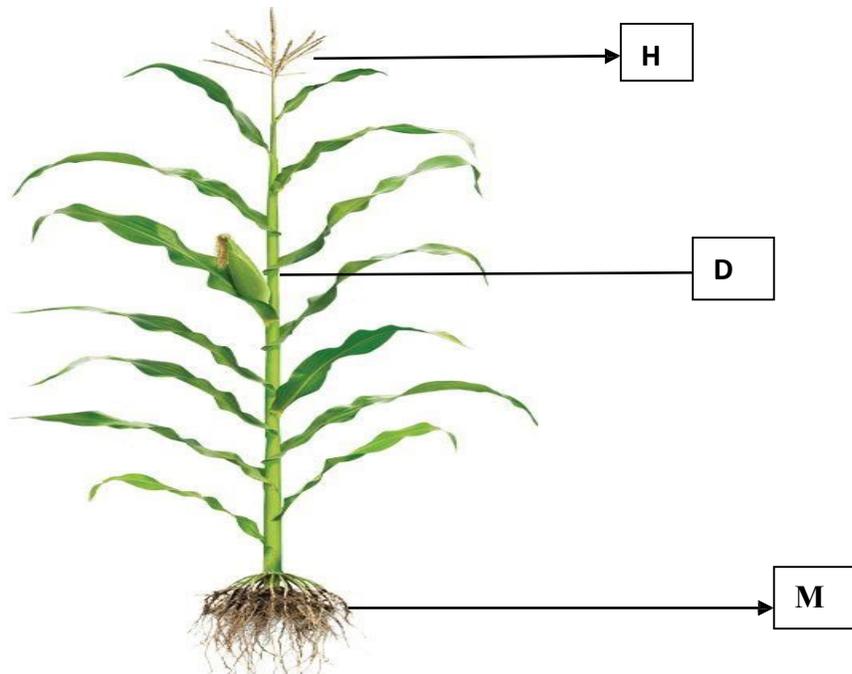
· Heating the garden soils kills the living organism hence no respiration.

21. The diagram below shows a tomato plant growing, study to answer the questions below.



- a) Identify the practice that has been done to the tomato plant above (1mk)
Staking
- b) Give two reasons for carrying out the practice mentioned in (a) above (2mks)
Production of clean fruits
Facilitates spraying and harvesting of crops
Controls incidences of disease outbreak as blight
Prevents infestation by soil borne pests
- c) Mention two market qualities considered in marketing the above vegetable (2mks)
Size
Degree of ripeness
Quality

22. The diagram below illustrates a maize plant whose variety is H614 study it to questions that follow.



a) Give the meaning of the variety number

H *hybrid* (1 ½ mks)

6 altitudes

4 series of release

b) Name one disease that affect the part labeled **H**

(1mk)

Head smut

c) Name one field practice carried out on the part labeled **M**

(1 Mk)

Earthing up

d) Name three storage pests that can affect the part labeled **D** (1 ½ Mks)

Weevils

Red flour beetle

Rats

section C (40 Marks)

Answer only two questions in this section, in the space provided after question 25.

23. a) State **four** effects of HIV/ AIDS and other illnesses on Agriculture. (4 Mks)

Loss of skilled labour

Lack of motivation to invest in agricultural production

Money is spent on drugs than in agricultural investment

Time is wasted caring for the sick

4x1 marks

b) State and explain **five** factors considered when designing a crop rotation program.

(10Mks)

Crop root depth- plants that are deep rooted should be alternated with shallow rooted crops

Soil fertility- leguminous crops should be included to improve on fertility

Pest and diseases control – crops of the same family should not follow each other in a sequence

Weed control – crops associated with some weeds should not follow each other in a sequence

Crop nutrient requirement- heavy feeders should be planted first followed by light feeders

Soil structure a grass ley should be included at the end of the rotation program

5x2 marks

c) Explain **six** factors that contribute to the competitiveness of weeds. (6Mks)

- *Have ability to produce large quantities of seeds for example pig weed and black jack remain*
- *Weeds remain viable in the soil for a long time awaiting conducive germination conditions*
- *Weeds remain viable in the soil for a long time waiting conducive germination conditions*
- *Most weeds are easily and successfully dispersed*
- *Some have ability to propagate vegetatively*
- *Elaborate or extensive root system in supporting the plant*
- *Have ability to survive where there is limited oxygen supply*

- Some have a short life cycle

1x6 marks

24. a) Describe **seven** physical methods of controlling soil erosion. (7 Mks)

i) Trash/ stone line— crop remains or stones are arranged across a slope. They trap some soil, reduce the speed of run off and encourage infiltration

ii) Bunds— these are heaps of soil 1-2m at the base and 60cm high, along the contours. Grass may be planted on top to hold the soil particles together. They should be 30m apart.

iii) Cut off drains/ Diversion ditches— this is an open trench with an embankment on the lower side. The embankments are planted with grass or trees. It diverts run off water from a cultivated slope to: a natural water way e.g river, a non-erodable stony/ rocky ground, a grassland or an artificial water way.

iv) Ridges/ Ridging — rows of heaped soil constructed across the slope for water to flow at a low speed encouraging infiltration.

v) Dams/ Reservoirs/ Check dams

-Dam— a wall/ barrier constructed across a river/ valley to hold and store water and encourage soil deposition. It reduces the speed of run off.

-Reservoirs— tanks built to hold excess water from roof tops.

vi) Weir/ Check dams— wall constructed across a gully/ channel to reduce water speed and to trap soil.

vii) Gabions/ porous dams— boxes of wire mesh filled with stones and built across a slope or gully. They:-

-Reduce water speed and erosive power of run off.

-Allow water to pass through as they trap soil filling the gully.

viii) Terraces— these are embankments and trenches constructed across a slope to:-

-Encourage settling and retention of eroded soil.

-Slow down the speed and flow of water.

-Direct excess water to a non-erodable ground at a low speed.

b) Give a reason for each of the farm records kept on a dairy farm. (5 Mks)

- Feeding records are kept to monitor production
- Breeding records gives the helps in planning parturition of the dairy animals
- labour records help in making payment vouchers for the workers and measure efficiency
- Marketing records helps to monitor production and used in calculating gross margins

- *Production records informs on the level of production of each animal and may be used in culling*
- *Health records monitor the livestock health, diseases prevalence and best measures to use in controlling them*

c) State and explain **four** factors that affect rooting of cuttings (8Mks)

- **Temperature**- *warm temperatures are required around the roots zone and cool temperatures around the aerial part for shoot formation*
- **Relative humidity**- *high humidity is required to reduce the transpiration rate and maintains turgidity all the time*
- **Light intensity**- *soft wood cuttings need high intensity to produce roots*
- **Oxygen supply** *plentiful oxygen is needed for root formation*
- **Chemical treatment** – *hormones used will induce faster root development*
- **leaf area** *soft wood cuttings requires lots of leaves for photosynthesis*

25. a) Describe the harvesting of tea. (5 Mks)

- *Harvest 2 leaves and a bud to maintain quality*
- *Harvesting should be done at an interval of 10-14 days during dry spell and 5-7 days during wet season*
- *Plucked tea should be put in woven baskets*
- *Plucked tea awaiting transportation should be put under a shade*
- *Transportation of tea leaves should be done on the same day*

b) Describe **five** factors to consider when formulating a farm plan (10 Mks)

- *Size of the farm will determine the number of enterprise and scale of production*
- *Environmental factors will determine the type of enterprise to establish*
- *Current market labour trends will assist in planning labour especially during peak periods*
- *Farmers objectives and preferences will put the farmers consider ration and assist him to own the farm.*

- *Existing market conditions and price trends will inform production with what is needed in the market in mind.*
- *Availability and cost of farm inputs so as to embark on farm enterprise which is affordable*
- *Government policy there are some enterprises whose production is regulated by the government*
- *Security should be ensured in the enterprises that need security by locating them near to the farm house*
- *good transport and communication network is needed for the produce to reach the market early*

5x2marks

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c) Describe **five** methods of fertilizer application. (5 Mks)

- *Broadcasting is done by scattering the fertilizer randomly*
- *Hole placement is done by putting fertilizer on planting holes or drills*
- *Side dressing is done by placing fertilizer close to the growing plant*
- *Foliar spraying is done by applying the fertilizer on the foliage*
- *Fertigation is done by mixing fertilizer with drip water*