

AGRICULTURE
FORM FOUR
MID-TERM EXAM
TERM 2 - 2024
MARKING SCHEME

SECTION A: (30 MARKS)

1. Outline three factors that limit the use of shifting cultivation in Kenya today. (1 ½ mks)
- **High population density.**
 - **Limited land size**
 - **Growing of perennial crops.**
 - **Individual land ownership**
 - **High number of livestock per unit area**
2. Give three practices that would improve crop yields in areas with inadequate rainfall. (1 ½ mks)
- **Irrigating crops**
 - **Mulching to conserve moisture.**
 - **Early planting.**
 - **Planting early maturing crops.**
 - **Planting drought resistant crops.**
 - **Minimum tillage.**
 -
3. Name four components of the soil. (2mks)
- **Soil mineral matter**
 - **Soil organic matter.**
 - **Soil air.**
 - **Soil water.**
 - **Soil living organisms.**
4. Give two farming practices that may cause pollution of water sources. (2mks)
- **Use of excessive Agrochemical**
 - **Cultivation along riverbanks.**
 - **Ploughing up and down the slope.**
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5. List down two advantages of early seedbed preparation. (2mks)
- **Minimum labour competition.**
 - **Allows sufficient time for weeds to be dehydrated.**
 - **Allows for early planting.**
 - **Allows sufficient time for decomposition of organic matter.**
 - **Destroys different stages of pests.**
6. A farmer is supposed to apply a compound fertilizer 20:30:10 on a plot measuring 5m long and 4m wide at the rate of 200kg/ha.
- a) What do figures 20:30 stand for? (1mk)
-**20%**..... Nitrogen
-**30%**..... Phosphorous.

- b) Calculate the amount of fertilizer the farmer will require for the plot. Show your working. (3mks)
- $$\begin{aligned}
 2000\text{kg} &= 10,000\text{m}^2 \\
 ? &= 20\text{m}^2 \\
 &= \frac{2000\text{kg} \times 20\text{m}^2}{10,000\text{m}^2} \\
 &= 0.4\text{Kg/ha}
 \end{aligned}$$
7. Name two types of labour records. (2mks)
- i. **Labour utilization analysis**
 - ii. **Master roll.**
8. Give two activities carried out during hardening off of tomatoes seedlings in the nursery. (2mks)
- **Reduce the amount of shade gradually**
 - **Reducing watering gradually.**
 - **Reduce the amount of mulch gradually.**
9. Differentiate between carrying capacity and stocking rate. (2mks)
- Carrying capacity - is the ability of forage stand to maintain a particular number of livestock units per unit area while stocking rate refers to the number of livestock units maintained per unit area of land.*
10. State four disadvantages of communal land ownership. (2mks)
- i. **Leads to soil erosion.**
 - ii. **Poor livestock breeding programme.**
 - iii. **Faster spread of pests and diseases.**
 - iv. **Lack of individual tenure security.**
 - v. **Low output.**
11. State four ways of improving labour productivity in Agricultural production. (2mks)
- **Training.**
 - **Farm mechanization.**
 - **Giving incentives.**
 - **Labour supervision.**
 - **Assigning specific task to workers.**
12. State four sources of capital for a maize farmer. (2mks)
- **Savings**
 - **Credit facilities.**
 - **Grants.**
 - **Inheritance.**
13. Give four examples of joint products. (2mks)
- **Wool and mutton.**
 - **Mutton and skin.**
 - **Cotton wool and cotton seeds**
 - **Milk and butter.**
 - **Beef and hides**
 - **Honey and wax**

14. State two disadvantages of hiring a tractor to provide labour on the farm. (1mk)
- **They are not available to most farmers who need them.**
 - **They may be overcharged especially by private and individual farmers.**
 - **They are expensive.**

SECTION B:

15. The diagrams labeled R and S illustrate some arable weeds. Study the diagrams and answer the questions that follow.

- a) Identify weeds:

R – **Oxalis**

S – **Double thorn**

- b) Why is weed R difficult to control in the field. (1mk)
- Has underground storage bulbs.**

- c) State two harmful effects of weed S in crop production. (2mks)

- **Competes for nutrients, water, space and light.**
- **Habours pests and diseases.**
- **Increases the cost of production.**
- **Reduces the quality of farm procedure.**

16. Study the diagram below and answer the questions that follow

- a) Identify the practice carried out in the above diagram. (1mk)
- Trelishing**

- b) Identify a crop that requires the above practice. (1mk)
- Passion fruits.**

- c) Identify any 3 practices carried out on crops after harvesting. (3mks)

- **Trushing/ shelling**
- **Drying**

- **Cleaning**
- **Sorting and grading**
- **Dusting**
- **Processing.**
- **Packing**
- **Storage**

17. The diagrams below illustrate some common bird pests. Study them and answer questions that follow.

- a) Identify birds pests. (2mks)
 Q - **sudan pioch / Quelea quelea**
 R - **weaver birds**
- b) State one effect of bird pest R on crops.
Causes serious damage to maize crops during the milky stage.
- c) Give two possible control measures of Bird pest Q. (2mks)
- **Poisoning.**
 - **Use of explosives.**
 - **Planting of resistant grain varieties like goose neck sorghum varieties**
 - **Trapping**

18. Study the diagram below and answer the questions that follow.

- a) Name the type of soil erosion illustrated above. (1mk)
Gulley erosion
- b) State three effects of the above type of soil erosion in Agriculture. (3mks)
- **Interferes with farm mechanization.**
 - **Productive top-soil is removed**
 - **Causes land dunudation.**
 - **Leads to siltation in water source.**
 - **Damage to transport system.**
 - **Damage to water conveying system.**
- c) State one control of the above type of soil erosion. (1mk)
Building gabions across the gulley.

SECTION C: (40 MARKS)

Answer any TWO Questions in this section.

19. (a) The table below shows the production of maize at various levels of N.P.K fertilizer application. Study it carefully and answer the questions that follow.

Fixed factor land ha	Variable input N.P.K in Kgs	Total product of maize in 90kg bags	Marginal product of maize in 90kg bags	Average product
1	50	10	0	10
1	100	27	17	13.5
1	150	42	15	14
1	200	56	14	14
1	250	63	7	12.6
1	300	65	3	10.8
1	350	65	0	9.3
1	400	60	-5	7.5
1	450	52	-8	5.8
1	500	42	-10	4.2

- i) Complete the table above. (4mks)
- ii) Using the graph provided, draw a graph of total product, marginal product and average product against variable input of N.P.K fertilizer and mark three zones of production. (6mks)

- (b) State and explain five problems experienced by tea farmers when marketing Agricultural produce. (10mks)

Perishability – some Agricultural products are perishable and deteriorate in quality very rapidly and therefore must be stored under refrigeration of processed in other forms. All those are expensive hence increase the marketing costs.

Seasonality – production of Agricultural commodities is seasonal in nature and are only available in plenty at harvest time which affects negatively market prices and creates shortage problem.

Bulkiness – most of Agricultural products weigh heavily, occupy large space and have low value per unit weigh compared to other non-agricultural commodities. They therefore require large storage space, and transporting them increase the prices beyond the ability of buyers.

Storage – some Agricultural products are seasonal in nature therefore there is need to store them to make them available in between harvests which requires construction of storage facilities which are expensive thus increasing the cost of marketing.

Poor transport system – most of Agricultural commodities are produced in rural areas which have poor roads and inadequate means of transport therefore perishable products get spoiled before reaching the market.

Change in market demand – most of Agricultural production plans are based on today's demand which may yield products months later this may change the consumers' tastes and preferences hence affecting both demand and price.

Limited elasticity of demand – most of Agricultural products are food products which is usually inelastic therefore an increase in quality supplied doesn't necessarily result in increase in food bought and consumed making farmers to dispose excess supply at a throw away price.

Lack of market information – most of the farmers have no knowledge of market information regarding prices therefore they may be exploited by unscrupulous middlemen who may buy their products at a low price and sell at high profit margins.

Delayed payments – these reduces the morale of farmers.

Competition from cheap imports – similar produce imported into the country at cheaper prices can compete with locally produced products hence market problem.

20. (a) Explain eight cultural methods of soil and water conservation.(8mks)

Contour farming – cultivation and planting done along the slopes helps in holding water thereby increasing infiltration and runoff.

Mulching – covers the soil thereby reducing splash erosion and reduced speed of runoff.

Afforestation / Reafforestation – trees protect soil from splash erosion by controlling the strength of rain drops.

Intercropping – covers the ground cover preventing splash erosion and surface runoff.

Minimum tillage – to maintain good soil structure which is not easily detached.

Cover cropping – protects the soil from effects of rain drops.

Grass strip/ filter strips – reduce the speed of runoff and filter out eroded soil.

Strip cropping – gives good soil cover to control movement of water and soil particles helping in soil control.

Vegetated water ways – slow down runoff preventing further erosion.

(b) Describe the establishment of napier grass under the following subheadings.

i) Seed bed preparation.

(5mks)

- **Land is prepared early during the dry season.**

- **Vegetation is cleared and all stumps should be removed.**

- **Primary cultivation is the carried out and all perennial weeds are removed.**
- **It is followed by secondary cultivation land.**
- **Is harrowed to produce a medium tilth.**
- **Furrows are made at a spacing of 90-100cm between the rows and 50cm between the plants.**

ii) Planting. (5mks)

- **Stem cutting or splits are used.**
- **Planting should be done at the onset of the rains.**
- **Stem cutting should be placed in the furrows or planting holes in a slanting manner.**
- **A compound fertilizer such as NPK 20-20-20-0 is applied.**
- **Should be applied at a rate of 200kg / ha at a planting hole or furrow.**
- **Two nodes should be covered underground and one node should remain above the ground.**
- **Planting material should come from a healthy and mature plant.**

iii) Utilization. (2mks)

- **Can be cut and fed to animals directly**
- **Excess napier grass is conserved as silage for future use.**
- **Can also be dried and used as mulching material.**

21. (a) Describe five ways in which biotic factors influence crop production. (10mks)

- i. **Nitrogen fixing bacteria – convert atmospheric nitrogen to nitrates for plant uptake.**
- ii. **Pollinators – transfer pollen grains from one flower to another flower to bring variation.**
- iii. **Decomposers – break down organic matter remains to release nutrients for the plant.**
- iv. **Pests – attack crops by eating plant parts and introducing/ spread disease causing microorganisms to crops.**
- v. **Pathogens – they cause crop diseases**
- vi. **Predators – reduce pest population.**

(b) Explain ten functions of marketing. (10mks)

- i. **Buying and assembling.**
- ii. **Transporting and distribution.**
- iii. **Storage.**
- iv. **Packing.**
- v. **Processing.**
- vi. **Grading and standardization.**
- vii. **Packaging.**
- viii. **Collecting marketing information.**

- ix. Selling.**
- x. Financing**
- xi. Bearing risks.**

