

Name: Adm No:

Stream: Date: School:.....

Candidate's signature:

SULIMO JOINT EXAM

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 sections; A, B and C.
- (d) Answer all the questions in section A and B.
- (e) Answer any two questions in section C.
- (f) Candidates to confirm that all pages are printed as indicated and that no questions are missing.
- (g) Candidates should answer all the questions in English.

For Examiners Use Only

SECTION	MARKS	CANDIDATES SCORE
A (1- 14)	30MKS	
B (15 – 18)	20MKS	
C (19 – 21)	(19) 20MKS	
	(20) 20MKS	
	(21) 20MKS	
TOTAL	90MKS	

This paper consists of 10 printed pages.

Section A(30Marks).

Answer all questions in this section.

1. Distinguish between aquaculture and apiculture.

(1mark)

Aquaculture is the practice of rearing fish in fish ponds while apiculture is the practice of rearing bees in bee hives

2. State four benefits of mixed farming.

(2marks)

- There is mutual benefit between crops and livestock (crops provide feed for livestock & livestock provide farm yard manure)
- The farmer gets income throughout the year
- It ensures proper utilisation of labour and land throughout the year
- Is a method of diversification (No total loss)

Explain how phosphorus ~~as a nutrient~~ element is lost from the soil

3. State four characteristics of a good site for making a compost manure.

(2marks)

- Through soil erosion
- Through leaching
- Through volatilisation
- Harvested by crops
- Burning of vegetation
- Change in soil pH

4. State four information contained in a breeding record.

(2marks)

(i) Percentage of Phosphorus = 20%

(ii) 300kg/ha complete fertiliser

$$300\text{kg of fertiliser} = \frac{10,000\text{m}^2}{10\text{m} \times 5\text{m}}$$

$$\frac{300 \times 10 \times 5}{10 \times 5} = \frac{15}{10} = 1.5\text{kg}$$

5. Give four advantages associated with communal land ownership.

(2marks)

- The problem of landlessness does not exist
- Land cannot easily be fragmented/sub-divided
- It allows free movement of livestock
- The land is allowed to rest for a while so as to allow pasture regenerate
- There is no land disputes (community elders solve local problems)

6.(a) What are the functions of the following in the preparation of compost manure. $\frac{1}{2}$ marks)

i) Top soil

To introduce micro-organisms required for decomposition

ii) Wood ash

Increases the percentage of ~~pk~~ potassium and phosphorus in the manure

iii) Layer of manure

Provide nutrients for micro-organisms

7(a) List two methods of frame formation in tea production

(1mark)

Formative method / Pruning
Pegging method

(b) State three ways of improving labour productivity in the farm .

(1½marks)

Training
Farm mechanization
Labour supervision
Giving incentives and improving term ~~of~~ and conditions of services

8. State four factors considered in designing a crop rotation programme.

(2marks)

Crop nutrient requirement - Heavy feeders should come early in the rotation program
Pest & disease control - Crops from the same family should not follow each other in the rotation program because they are affected by the same pests & diseases
Soil fertility - Legumes should be included in the program to fix atmospheric nitrogen
Crop depth - Deep rooted crops should be rotated with shallow rooted crops
Weed control - Cover crop should be included to smother the weeds
Soil structure - Grass ley should be included to improve soil structure

9. Outline four precautions observed in harvesting of cotton.

(2marks)

- Pick immediately when the bolls open to prevent staining by dust
- Use clean hands to avoid staining the lint
- Use clean containers to avoid contamination
- Use different containers for grade AR (safi) and grade BR (fifi)
- Avoid using gunny or sisal bags to prevent mixing of lint & sisal fibres
- Avoid picking leaves and twigs to avoid contamination
- Pick when the lint is dry / avoid picking wet cotton to prevent fibres from sticking together

10. Cal J variety of tomato is spaced at 90cm by 45cm. Calculate the plant population in a 0.4 ha piece of land. (2marks)

$$\begin{aligned} \text{Plant population} &= \frac{\text{Area}}{\text{Spacing of crop}} \\ &= \frac{0.4 \text{ ha}}{90 \text{ cm} \times 45 \text{ cm}} \\ &= \frac{0.4 \times 10,000 \text{ m}^2}{0.9 \text{ m} \times 0.45 \text{ m}} \\ &= \frac{4,000 \text{ m}^2}{0.405 \text{ m}^2} \\ &= 9876.543 \\ &= 9876 \text{ Plants.} \end{aligned}$$

11. Give four financial documents in farm accounts. (2marks)

Invoice
Receipt (Cash sale)
Delivery note
Purchase order
Statements

12. State four common fungal diseases in crop production (2marks)

Armillaria root-rot	Powdery mildew, Headsmut
Damping off	Fungal cigar end rot
Fusarium wilt	Panama disease
Downy mildew	Late blight / Early blight
Rust, Anthracnose	Leaf spot, Leaf blight, Blast

13. State four benefits of draining a swampy land for cabbage production. (2marks)

Increases soil volume around the root zone
Improves soil temperature / Raises soil temperature
Improve microbial activities
Reduces soil erosion
Improves soil erosion
Removes toxic materials

14(a) List three beneficial biotic factors in agricultural production. (1½marks)

Pests	Pathogens (disease-causing micro-organisms)
Parasites	Pollinators
Predators	Nitrogen fixing bacteria
Decomposers	

(b) Give four benefits of early seedbed preparation. (2marks)

- To kill weeds
- To incorporate manure & organic matter into the soil
- To destroy different stages of crop pests
- To aerate the soil
- To encourage penetration of roots in the soil
- To encourage water infiltration into the soil
- To make subsequent operations possible e.g. Planting

Section B (20Marks).

Answer all questions in this section.

15. The diagrams below show types of weeds.



A



B



C Nut grass.

(a) Identify weeds labeled. (2marks)

A Thorn apple.

B Double thorn.

(b) Classify the weeds the weeds above based on plant morphology. (2marks)

B Broad-based leaves.

C Narrow-based leaves.

(c) State **one** effect of weed A in livestock production. (1mark)

It is poisonous to animals.

16. A farmer owns a piece of land on which he can grow maize, cabbages, and beans. The expected yields and selling prices of the crops are as shown below:

Crop	Yield (kg)	Selling Price (Ksh/kg)	
Maize	4000	40	160,000
Cabbages	2800	60	168,000

Beans

3000

80

240,000

If the cost of producing maize, cabbages, and beans is the same:

(a) Which crop should the farmer grow? Show your working clearly.
marks

(2)

Beans

(b) (i) What is the farmer's opportunity cost?
mark)

(1)

Cabbages - 168,000

(ii) Give a reason for your answer in (b)(i) above.

(1 mark)

It's the best alternative forgone.

(c) Give a reason why farmers make a choice on the enterprise to be implemented on the farm.

(1 mark)

Because the resources are scarce.

17. The diagram below shows a soil borne pest that attacks plant roots.



(a) Identify the pest.

(1 mark)

Nematode

(b) Give two symptoms of attack by the pest in tomato production.

(2 marks)

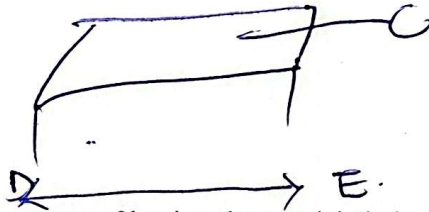
✓ Stunted growth. ✓ Discolouration of leaves.
✓ Wilting of crops.
✓ Root swells / formation of root galls.

(c) State two control measures for the above pest.

(2 marks)

✓ crop rotation.
✓ use of nematicides.
✓ Fumigation of soil.
✓ closed season,
✓ planting resistant varieties.

18. The diagrams below is a nursery bed. Study them and answer the questions that follow.



- (i) State two advantages of having the part labeled C (2marks)
 ✓ Reduce evaporation. ✓ protect from excess sunlight.
 ✓ prevent damage of seedlings by strong winds.
- (II) State two ways of hardening off seedlings in the structure above. (2marks)
 ✓ Gradual removal of shade.
 ✓ Reduce watering.
- (c) State the recommended distance between D and E width of a nursery bed (1 mark)
 1m wide.

Section C (40Marks).

Answer only two questions in this section.

19. (a) Outline four advantages of silage making.
 Explain four effects of pests on maize field. (4marks)
- (b) Describe the process of water treatment.
 Explain six management practices carried out in the nursery from when seedling emerge to time of transplanting. (8marks)
- (c) State and explain five factors that can increase demand for tea in a market.
 Causes of land fragmentation and sub-division (5mks)
- (d) Explain five factors that determine number of times secondary tillage operations are done. (5mks)
- (e) Effects of early defoliation in pastures (3mks)
20. (a) State five advantages of using vegetative materials as a method of crop propagation (5marks)
- (b) Outline five reasons of training in crop production.
 State five ways in which farmers can adjust to risks and uncertainties. (5 marks)
- (c) State and explain five cultural methods of soil and water conservation. (10 mks)

21.(a) Explain six ways in which biotic factors influence Agricultural production. (6mks)

(b) Explain six factors considered when selecting seeds for planting. (6 mks)

(c) (i) The following information is a farm record Mrs Sanda had kept as at 31st June 2006. Study it and prepare and prepare a balance sheet from the information below. (6 marks)

Cash at hand	20000 ✓
Cash at bank	66000 ✓
Buidings	50000 ✓
Disc ploughs	16000 ✓
Debtors	16000 ✓
Working tools	12000 ✓
Bank overdraft	24000
Creditors	20000 ✓
Loan	50000 ✓
Cattle	40000 ✓
Land	80000 ✓

(ii) Is Sanda's farm solvent or insolvent? Give a reason.

(2 mks)

19 a). Advantages of Silage making.

- ✓. More nutrients are preserved.
- ✓. It has few field losses.
- ✓. It is less dependent on weather conditions.
- ✓. Can be fed directly without liquid additives.
- ✓. There are no storage problems.

b). Process of chemical water treatment.

1. Filtration at water intake.

- ✓. Water from the river is passed through a series of sieves to trap large particles.

2. Softening of water.

Water flows into a mixing chamber where it is mixed with soda ash - which softens water and alum - which helps in coagulation.

3. Coagulation and sedimentation.

- Softened water moves to Coagulation tank where ^{solid} particles settle down.
- The tank is open to remove bad smells.
- water stays for 36 hrs to kill bilharzia worms.

4. Filtration .

- water passes into a filtration tank through layers of gravel to trap the remaining solid particles.

5. Chlorination .

- chlorine is added to kill pathogens / disease causing micro-organisms .

6. Storage .

- ~~sa~~ Treated water is stored in larger tanks before distribution . (8mks)

c) Causes of land fragmentation and sub-division

✓ Shifting cultivation .

✓ Settlement and resettlement

✓ Traditional System .

✓ Population pressure .

✓ Accumulation of land holdings by banks .

d) Effects of early defoliation in pastures .

✓ Forage has very high moisture content .

✓ Low crude protein yield .

✓ Very low dry matter content .

✓ Very high protein content .

✓ Gradual weakening of the pasture .

20 a) . Factors that determine number of times secondary operations are done .

i) Topography - Fewer operations are carried out on steep slopes to prevent erosion .

ii) Size of planting materials - small seeds require fine tilth hence more operations .

iii) Moisture content of the soil - Dry soils require fewer operations to conserve soil moisture .

iv) Type of implement used - Disc ploughs require more operations than mould-board ploughs .

v) Type of soil - sandy soils require fewer operations

Sx1 = 5mks .

20 b) Outline reasons of training in crop production.

- ✓ To prevent the breakage of plants with weak stems.
- ✓ Prevents soiling of fruits.
- ✓ prevents infestation of soil borne pests and diseases.
- ✓ Encourage penetration of spray.
- ✓ makes harvesting of fruits easy eg in tomatoes.
- ✓

c) Five cultural methods of soil and water conservation.

i) Mulching - prevents splash erosion by reducing the impact of raindrops.

ii) Agroforestry - Trees bind the soil particles together preventing erosion.

iii) Covercropping - prevents the exposure of soils to agents of erosion (reduces speed of surface run-off).

iv) Strip cropping - Reduces the speed of surface run-off.

v) Contour farming → Reduces speed of surface run-off.

vi) Correct spacing - closer spacing ensures adequate ground cover preventing exposure of soils to agents of erosion.

vii) Inter cropping - provides ground cover, preventing erosion.

21 (a) Biotic Factors:

- Pests transmit crop diseases / it exposes crops to secondary infection / lowers the quality and quantity of crop yield
- Parasites lowers the quality of hides and skins, transmit diseases and increase the cost of production.
- Predators - Kill livestock hence affect agriculture
 - It kills crop pests
- Decomposers improve soil fertility by bringing about decomposition of the organic matter.
- Nitrogen Fixing Bacteria - convert atmospheric Nitrogen into Nitrates
- Pollinators transfer pollen grains from anthers to stigma causing fertilization and fruit formation.

(b) Disadvantages of row planting:

- No proper foliage hence soil erosion
- Requires more labour and time hence expensive
- Requires some skills eg measuring distances

(c) Balance Sheet of Mr Ganda's Farm as at 31st June 2006.

Liabilities	Ksh	Ct	Assets	Ksh	Ct
<u>Long-Term Liabilities</u>			<u>Current Assets</u>		
Loan	50,000	00	Cash at hand	20,000	00
			Cash at bank	60,000	00
	50,000	00	Debtors	10,000	00
<u>Current Liabilities</u>			Cattle	40,000	00
Creditors	20,000	00		140,000	00
Bank overdraft	24,000	00	<u>Fixed assets</u>		
			Disc plough	16,000	00
			Building	50,000	00
			Working tools	12,000	00
			Land	80,000	00
				158,000	00
Total liabilities	94,000	00	Total Assets	300,000	00
Grand Total	300,000	00	Grand Total	300,000	00

(ii) Solvent - Value of Assets is higher than the value of liabilities.