SECTION A (30 marks)

No.	Marking Scheme	Marks
1.	**Four methods of draining swamps for vegetable production:** Use of open ditches; Accept Canals & furrows. Use of underground pipes; Use of French drains; Use of cambered beds; Pumping; Planting of trees; 4 x ½ =	(2 marks)
2.	**Four factors that determine the quality of farmyard manure:** Type of animal used; Species Type of food eaten; Type of litter used; Method of storage; Age of farmyard manure; 4 x ½ =	(2 marks)
3.	**Four reasons why land fragmentation is common:** Buying and selling portions of land; ✓ Inheritance; ✓ Resettlement; ✓ Settlement; ✓ Land speculation; Switching from communal to individual ownership; 4 x ½ =	(2 marks)
4.	**Four types of soil erosion on steep slopes:** Rill erosion; vi River bank Gulley; Solifluction/Mass wasting Land slide; ✓ Splash 4 x ½ =	(2 marks)
5.	(a) **Bird** iv Sparrow Weaver bird; v Domestic fowl/chicken. Quelea quelea/Sudan dioch. Sunbird; Mouse bird 2 x ½ = (b) **Rodents** Moles, hedge hog Rats, Porcupine Squirrels; iv mice 2 x ½ =	(2 marks)

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1.	**Four methods of draining swamps for vegetable production:** I Use of open ditches; Accept Canals & furrows. II Use of underground pipes; III Use of French drains; IV Use of cambered beds; V Pumping; VI Planting of trees; 4 x ½ =	(2 marks)
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4.	**Four types of soil erosion on steep slopes:** I Rill erosion; VI River bank II Gulley; III Solifluction; Mass wasting IV Land slide; V Splash 4 x ½ =	(2 marks)
5.	(a) **Bird** IV Sparrow I Weaver bird; V Domestic fowl/chicken II Quelea quelea; Sudan dioch. III Sunbird; Mouse bird 2 x ½ = (b) **Rodents** I Moles, hedge hog II Rats, Porcupine III Squirrels; IV mice 2 x ½ =	(2 marks)

No.	Marking Scheme	Marks
6.	**Four symptoms of viral diseases in crops:** i Leaf chlorosis; ii Leaf curling; iii Light green / yellow patches; / Mosaic iv Malformation / distortion of plant parts; v Rosette/abnormally short internodes; / stunted growth 4 x ½ =	(2 marks)
7.	**Four factors that make black jack more competitive than beans:** i Ability to produce large quantities of seeds; ii Seeds remain viable in the soil for long period; iii Seed have effective dispersion mechanisms; iv Ability to survive even where there is limited supply of nutrients; v Short life cycle; 4 x ½ =	(2 marks)
8.	**Four reasons tea is important to Kenyan economy** i Earn foreign exchange; ii Source of employment; iii Source of raw materials for industries; iv Provide market for industrial goods; v Source of capital for other investments; vi Beverage supply; 4 x ½ =	(2 marks)
9.	**Four factors of production:** i Land; ii Capital; iii Management / Entrepreneurship iv Labour; 4 x ½ =	(2 marks)
10.	**Four pieces of information recorded in a master roll:** i Name of the worker; / ID number of the worker ii Payroll number; iii Days worked; iv Rate of payment; v Wage/salary; vi Signature; of the worker vii Total pay 4 x ½ =	(2 marks)

No.	Marking Scheme	Marks
11.	**Four ways in which soil pH influences crop production:** i Influence choice of crop to grow; ii Influences availability of plant nutrients; iii Affects activities of soil micro - organism; iv Increase incidences of certain soil borne pests and diseases; Determines the type of fertilizer to apply 4 x ½ =	(2 marks)
12.	**Four sites of growing agroforestry trees:** i Boundaries; ii River banks; iii Terraces; iv Slopes; v Homestead; vi Woodlot; 4 x ½ =	(2 marks)
13.	**Advantages of timely planting:** i To escape crop pest/diseases ii Benefit from nitrogen flash; flush iii Out compete/ smother weeds; iv Maximise on rainfall duration; v Fetch high market price; vi Matures during the dry period; vii Utilize available moisture in the soil. 4 x ½ =	(2 marks)
14.	**Four sources that can provide knowledge:** i Agricultural farmers training centres; ii Agricultural shows; iii Farmers field days; iv Farmers cooperatives / associations; v Agricultural extension services; vi Media (social, print); vii Private agricultural related enterprises; 4 x ½ =	(2 marks)
15.	**Advantages of having a title deed:** i Title can be used to secure credit; ii It confers security of tenure; iii Minimises land dispute; iv Security of tenure encourages investment in long term projects; v Enable owner to lease part of the land for extra income; vi Facilitate sale of land; 4 x ½ =	(2 marks)

SECTION B (20 marks)

No.	Marking Scheme	Marks
16. (a)	**Pest** – Cotton stainer. / Dysdercus spp/Dysdercus Cingulatus 1 x 1 =	(1 mark)
(b)	**Classification of the pest** - Insect with piercing and sucking mouth part 1 x 1 =	(1 mark)
(c)	**Two damages caused by the pest** I Staining cotton ~~boll~~ lint II Sucking plant sap III Transmission of diseases 2 x 1 =	(2 marks)
(d)	**One control measure** (III) hand picking & killing. (IV) Biological control. (VI) Resistant varieties. I Spray with appropriate chemicals / insecticides II Crop rotation / closed season (V) field hygiene 1 x 1 =	(1 mark)
17.	**Identify the correctly transplanted seedling:**	
(a)	F G 1 x 1	(1 mark)
(b)	**Reason** } tied. Planted at the same depth as it was in the nursery 1 x 1	(1 mark)
(c)	**Three management practices carried out immediately after transplanting:** I Watering; II Mulching; III Protection / ~~shade;~~ (IV) Shade 3 x 1	(3 marks)
18. (a)	**Calculate the plant population:** $\frac{\text{Area of the land}}{\text{Area occupied by onep lant}}$ = $\frac{5000\ m^2}{2.75m \times 2.75m}$ $= \frac{50m \times 100m}{2.75m \times 2.75m}$ = 661 plants √ 2 x 1 =	(2 marks)
(b)	**Quantity of CAN required:** Nitrogen required = $100kg/_2 = 50kg$ CAN contains 25% N required√	

$= \frac{50 \times 100}{25}$

= 200kg CAN ✓

1 x 1 = (1 mark)

(c) **Cost of fertilizer**

50 kg of CAN cost 5,000/=

200kg CAN will cost

$= \frac{200kg \times 5000/=}{50\ kg}$

= 20,000/=

2 x 1 = (2 marks)

19. (a) **Identification of:**

- J – Wild oat (*Avena fatua*)
- K – Striga / witch weed (*Striga hermontheca*) 2 x 1 (2 marks)

K - Mallow (*Malva verticillata*)

(b) **Two characteristics that make weed labelled J more competitive:**

i. It's a parasitic weed;
ii. It produces many seeds;
iii. Seeds remains viable in the soil for a long time;
iv. Short life cycle
v. Seeds are easily dispersed.

2 x 1 (2 marks)

(c) **One harmful effect of weed labelled K**

- Lowers quality of wheat 1 x 1 (1 mark)

Marking Scheme	Marks
Nursery establishment: i Site nursery in well protected and drained region; ii Prepare soil to fine tilth; vi Prepare shallow drills ~~about~~ 10cm apart; viii Drill the seeds evenly; ix Cover the seeds lightly with soil; x Mulch: apply mulch on the bed; xi Water the nursery bed; xii Remove the mulch upon germination; xiii Construct a thin shade over the nursery; xiv Water the nursery regularly; xv Carry out hardening off two weeks to transplanting. xvi Apply phosphatic fertilizer 10 x 1	(10 marks)
Field Management: i Water the seedlings in dry conditions; ii Gapping is done to ensure uniform spacing in the rows; iii Weed the seedbed to keep off weeds; iv Remove the soil around the roots and expose the bulb for expansion; v Top dress three ~~months~~ weeks after transplanting ~~with~~ (vi) 250kg CAN fertilizer/ha; vii Control pests such as onion thrips by spraying appropriate insecticide; viii Control common diseases such as downy mildew by crop rotation and use of appropriate fungicide; ix Bend the tops to prepare the bulbs for harvesting; x Dig up the bulbs to dry in the shade; ~~Turn the bulbs daily to ensure even drying;~~ xi Thinning-where direct planting is done 10 x 1	(10 marks)

(i) Clear the site (iii) Measure width of 1m with any length (iv) DO primary Cultivation

21(a) **Maize Production**

(i) Land preparation:

i Clear the land using appropriate tools;

ii Primary cultivation using a jembe/ox-plough/disc plough;

iii Secondary cultivation to obtain moderate tilth using a jembe/disc harrow/fork jembe; (iv) Prepare the land early before the the rains.

3 x 1 = (3 marks)

(ii) Planting:

i Plant early at the onset of rains; ✓

ii Plant at a depth of 2.5 to 10cm deep; ✓

iii Plant at spacing of 20-30cm by 75 to 90 cm; ✓

iv Plant 1 or 2 seeds per hole;

v Plant using hand method or planter;

vi Plant using phosphatic fertilizer/organic manure.

vii Apply 100 - 150kg phosphatic fertilizer/ha/Accept 5g/hole/a handful of manure/hole. / 1 tsp per

4 x 1 = (4 marks)

(iii) Field Management:

i Weed control;

ii Fertilizer application/top dress with nitrogenous fertilizer

iii Pest control;

iv Disease control;

v Watering / irrigation;

vi Gapping;

vii Thinning;

viii Apply 200kg N/ha

5 x 1 = (5 marks)

(iv) Harvesting

i Done after 4 – 9 months depending on variety and / at 20% moisture content;

(ii) Maize stalks are cut and ~~stoked~~ stooked to allow cobs to dry properly;

(iii) Cobs are removed by hand; / dehusking

(iv) Harvesting can also be done using combine harvesters;

4 x 1= (4 marks)

Marking Scheme	Marks
Utilisation of napier grass: I Cut and fed to livestock when stems are 1.5m high or when 3 – 5 months old; II Stems are cut using a panga or machete 2-5cm above soil surface to facilitate fast regrowth; III The panga should be sharp to avoid destroying the stump; IV Excess napier grass can be conserved as silage for future use; V Using a panga or chaff cutter, chop the forage into small pieces before feeding to livestock; 4 x 1=	(4 marks)
Importance of any three layers of soil profile: I **Superficial layer:** - contains a layer of decaying matter; II **Top Sol:** - contains a well aerated soil with nutrients for crop growth; III **Subsoil:** an impermeable layer that delays drainage making water and nutrients available to the crops; IV **Substratum or weathered rock:** contains partly weathered rock that hold water, availing it to roots of big trees during dry season. V **Parent rock:** forms ponds of water and determine characteristics of soil in a region. 3 x 2 =	(6 marks)

(c)	**Five roles of farm manager:** i Short term planning; ii Long term planning; iii Information gathering; iv Comparing the standards of one's enterprise with set standards; v Identify weaknesses and constrains and find solutions; vi Keep farm records; vii Implement farm decisions; max 5 x 1=	(5 marks)

(d)

DR				CR			
Date	**Particulars**	**Folio**	**Amount**	**Date**	**Particulars**	**Folio**	**Amount**
3/3/23	Bought 2 bags of layers mash	1	7,000	20/5/23	Sold 30 trays of eggs	1	12,000
17/3/23	Bought 3 bags of layers mash	2	10,500	28/5/23	Sold 20 trays of eggs	2	8,000

4 x 1 = (4 marks)