KENYA CERTIFICATE OF BASIC EDUCATION (K.C.B.E)

MARKING SCHEME

GRADE 10: AGRICULTURE (Theory) – TERM 1 – JANUARY 2026

SECTION A (60 MARKS)

Answer all questions.

1. (a) Legal ways a farmer can access land (Any 1 × 2 marks)

- ✓ Land leasing / renting
- ✓ Inheriting
- ✓ Donation
- ✓ Purchase
- ✓ Sharecropping
- ✓ Contract farming
- ✓ Joint venture agreement
- ✓ Government settlement schemes
- ✓ Community land allocation through groups

(b) Advantages of the method (Any 1 × 2 marks)

Learner to state any two advantages from any of the methods below

i. INHERITING LAND
Advantages

- ✓ Land is acquired free of charge.
- ✓ Ensures continuity of family land ownership.
- ✓ No major legal fees if the process is clear.
- ✓ Provides immediate settlement or farming area.
- ✓ Reduces landlessness within families.
- ✓ Supports cultural traditions of succession.
- ✓ Land already familiar to the inheritor (soil, climate, boundaries).
- ✓ Often comes with existing developments (houses, trees).
- ✓ Emotional value—ancestral land has sentimental importance.
- ✓ Easy transfer when there is a clear will.
- ✓ Encourages unity and identity among family members.

ii. BUYING / PURCHASING LAND
Advantages

- ✓ Full and permanent ownership rights.
- ✓ Buyer has complete control of land use.
- ✓ Increases financial security and wealth.
- ✓ Can be used as collateral for loans.
- ✓ Suitable for long-term farming (coffee, orchards).
- ✓ Encourages investment in irrigation, fencing, etc.
- ✓ Can subdivide, lease, or sell when desired.
- ✓ High resale value—land appreciates over time.
- ✓ No landlord or donor restrictions.
- ✓ Can be passed to future generations.
- ✓ Provides psychological satisfaction and stability.

- ✓ Enables expansion of farming enterprises.
- ✓ Allows establishment of permanent structures.
- ✓ Encourages serious planning and land conservation.
- ✓ Can be bought in location of choice—good soils, climate, market.

iii. DONATION / GIFTING OF LAND

Advantages

- ✓ Land is obtained free of charge.
- ✓ No need for loans or huge financial investment.
- ✓ Often comes from family members—trust-based and supportive.
- ✓ Can be given for community use (schools, churches).
- ✓ Faster and easier compared to buying.
- ✓ Minimizes legal disputes when properly documented.
- ✓ Encourages cooperation in families and communities.
- ✓ Helps landless or needy individuals start farming.
- ✓ Helps conserve family land for generations.
- ✓ Promotes community good through charity (e.g., donations for hospitals).
- ✓ Maintains cultural traditions of sharing land among relatives.

iv. LEASING LAND (RENTING LAND)

Advantages

- ✓ Cheaper than buying land.
- ✓ Suitable for short-term agricultural projects.
- ✓ Gives access to land even when the farmer cannot afford to buy.
- ✓ Flexibility to move to a more fertile or suitable area.
- ✓ No land rates or ownership taxes required.
- ✓ Lease agreements can be tailored to needs (annual, seasonal).
- ✓ Reduces pressure on farmers who have small land sizes.
- ✓ Allows large-scale farming without buying large acreage.
- ✓ The lessee does not bear the long-term risk of land degradation.
- ✓ Useful for young farmers with no land capital.
- ✓ Can be used as a trial before buying land.
- ✓ Easy to terminate when conditions become unfavourable.
- ✓ Promotes maximum use of idle land.
- ✓ Less legal paperwork than purchasing.
- ✓ Can support contract farming arrangements.

(c) Disadvantages of the method (Any 1 × 2 marks)

Learner to state any two disadvantages from any of the methods below

i. LEASING LAND (RENTING LAND)

Disadvantages

- ✓ No permanent ownership rights.
- ✓ Landowner may terminate the lease early.
- ✓ Not suitable for long-term crops like coffee, macadamia, or mangoes.
- ✓ Improvements (fencing, irrigation) benefit the owner, not the tenant.
- ✓ Cost may increase when lease contract is renewed.
- ✓ Disputes may arise over lease terms.
- ✓ Some leases are not legally documented, leading to conflicts.
- ✓ Lessee has limited decision-making rights on major land changes.
- ✓ Land may be withdrawn if the owner sells it.
- ✓ Requires regular payments, even when harvests fail.
- ✓ Lessee may be evicted without compensation.
- ✓ Tenant farmers cannot use the land as collateral for loans.

ii. DONATION / GIFTING OF LAND

Disadvantages

1. Usually involves small land sizes.

✓ May cause family conflicts, jealousy, or disputes.
✓ Donor may change mind if not legally documented.
✓ Land may be located in unsuitable areas for farming.
✓ Beneficiary may feel dependent or obligated to donor.
✓ Sometimes given with conditions (strings attached).
✓ Beneficiary cannot complain if the land is infertile or unproductive.
✓ Risk of double-allocation in extended families.
✓ Cultural expectations may force people to accept unwanted land.
✓ Donor may reclaim land if agreement was informal.
✓ Transfer may be expensive if legal procedures are required.

iii. BUYING / PURCHASING LAND

Disadvantages

✓ Very expensive—requires large capital.
✓ Many legal procedures (searches, surveys, title transfer).
✓ High risk of fraud (fake titles, double-selling).
✓ Payment may require loans → debt burden.
✓ High government charges (stamp duty, registration fees).
✓ Once purchased, errors in location cannot be easily reversed.
✓ Buyer bears all risks (drought, poor soils, landslides).
✓ Difficult to relocate once permanent structures are built.
✓ Land disputes with neighbours may arise after buying.
✓ Requires time-consuming processes before use.
✓ Land prices keep rising making it unaffordable.
✓ Poor-quality land may be sold at high prices.
✓ Investment in land reduces money available for other ventures.

iv. INHERITING LAND

Disadvantages

✓ Common cause of family conflict and inheritance disputes.
✓ Land sizes become smaller due to subdivision.
✓ Some family members may feel unfairly treated.
✓ Legal processes can be long, especially without a will.
✓ Land may come with debts or disputes.
✓ Inheritor may inherit poor-quality or infertile land.
✓ Cultural biases may deny some members (e.g., women) equal rights.
✓ Can be grabbed by greedy relatives before transfer.
✓ Boundary issues with neighbours are common.
✓ No freedom to choose the location or size of land.
✓ May require payment of succession fees or legal costs.

(d) Example where the method can be applied (1 mark)

- Leasing land for seasonal maize production in Trans Nzoia / Uasin Gishu / Narok.
- Contract farming for sugarcane, tea, or coffee.

Others include

1. LEASING LAND – Examples of Where It Can Be Applied

- ✓ A vegetable farmer in Kiambu leasing land for seasonal cabbage farming.
- ✓ A maize farmer in Trans Nzoia renting 5 acres for one planting season.
- ✓ A youth group in Nakuru leasing land to grow potatoes for profit.
- ✓ A dairy farmer in Nyeri renting grazing land during the dry season.
- ✓ Tea companies leasing land from smallholders for tea expansion.
- ✓ A horticulture exporter leasing land in Naivasha to grow flowers.
- ✓ Pastoralists leasing land for temporary grazing during drought.
- ✓ Contract farmers leasing land in Kakamega for sugarcane.
- ✓ Schools leasing land for practical agriculture lessons.
- ✓ An NGO leasing land for community tree planting projects.

2. DONATION (GIFTING) OF LAND – Examples of Where It Can Be Applied

- ✓ Parents gifting a piece of land to their daughter or son to build a home.
- ✓ A community donating land for a school, church, or hospital.
- ✓ A charity organization donating land for a children's home.
- ✓ A large farm owner giving a plot to a worker as appreciation.
- ✓ A family donating land for a public market or road.
- ✓ Government donating land to resettle internally displaced persons (IDPs).
- ✓ Relatives gifting a small piece of land to a newly married couple.
- ✓ Community elders giving out land for a water project or borehole.
- ✓ A philanthropist donating land to establish a community centre.

3. INHERITING LAND – Examples of Where It Can Be Applied

- ✓ A son or daughter inheriting part of the family farm after the death of a parent.
- ✓ Children inheriting land according to a written will.
- ✓ A widow inheriting her husband's land under succession laws.
- ✓ Clan land being allocated to younger generations.
- ✓ Family land in rural areas being subdivided among siblings.
- ✓ Pastoral communities passing grazing land to their children.
- ✓ Traditional homesteads being inherited by the first-born child.
- ✓ Banana or coffee plantations transferred to heirs.
- ✓ A family inheriting ancestral land near a river or forest.

4. PURCHASING / BUYING LAND – Examples of Where It Can Be Applied

- ✓ An urban worker buying a plot in Kitengela to build a house.
- ✓ A farmer buying 10 acres in Uasin Gishu for wheat production.
- ✓ A company buying land in Mombasa to build a factory.
- ✓ A youth buying land in Njoro to start poultry farming.
- ✓ A real estate investor buying land for subdivision and resale.
- ✓ A horticulture investor purchasing land in Thika for avocado farming.
- ✓ A cooperative society purchasing land for members' use.
- ✓ Government buying land for road construction or public utilities.
- ✓ A retiree buying land to settle after retirement.
- ✓ An organization buying land for schools, hospitals, or offices.

Learner could also give other relevant examples, accept correct list.

2. Uses of land and their importance (Any 3 × 2 marks)

Use	Importance
Crop production	Provides food, income, raw materials.

Livestock rearing	Produces meat, milk, hides, and manure.
Settlement	Provides shelter for the farm family.
Agroforestry	Provides fuelwood, timber, shade, windbreaks.
Water sources (dams, boreholes)	Supports irrigation and livestock.
Infrastructure (roads, stores)	Enables farm operations and movement.

3. (a) Natural factors affecting land productivity (Any 3 × 1 mark)

- ✓ Soil type
- ✓ Rainfall
- ✓ Temperature
- ✓ Slope / topography
- ✓ Altitude
- ✓ Wind patterns
- ✓ Porosity
- ✓ Texture
- ✓ Among others

(b) Benefits of planting trees (Any 3 × 2 marks)

- ✓ Prevent soil erosion by binding soil.
- ✓ Provide windbreaks to protect crops.
- ✓ Improve soil fertility through organic matter.
- ✓ Provide timber, fuelwood, and fodder.
- ✓ Improve micro-climate and increase rainfall infiltration.

(c) Suitable crops (Any correct)

High Altitude Crops	Low Altitude Crops
Irish potatoes	Maize
Barley	Sorghum
Wheat	Millet
Peas	Cassava
Apples	Coconut
Tea	Pineapple

4. Reasons why land is important in agricultural production (Any 3 × 2 marks)

- ✓ It is the basic resource where crops grow and animals live.
- ✓ Provides space for buildings, storage, and farm structures.
- ✓ Supports natural vegetation and forest resources.
- ✓ Determines types of crops and livestock suitable for production.

5. Soil properties and importance

(a) Physical properties (2 marks)

- ✓ Texture, structure, colour, porosity, temperature, water-holding capacity,
  Importance: Affects aeration, drainage, root penetration, and water retention.

(b) Chemical properties (2 marks)

- ✓ pH, nutrient level, cation exchange capacity (CEC), salinity.
  Importance: Influence nutrient availability and plant growth.

(c) Biological properties (2 marks)

- ✓ Presence of microorganisms, earthworms, organic matter content.
  Importance: Enhance decomposition, nutrient cycling, soil fertility.

6. (a) Labelling apparatus (Any correct × 1 mark)

i. Soil sample
ii. Crucible/metal can
iii. Wire gauze
iv. Heat source/candle

(b) Steps of the experiment (Any 4 × 2 marks = 8 marks)

i. Weigh the empty crucible.
ii. Add a known weight of dry soil sample into the crucible.
iii. Heat the soil strongly to burn organic matter.
iv. Allow to cool and re-weigh.
v. Calculate weight loss to determine humus content.

7. (a) Types of soils (3 × 1 mark)

- ✓ Sandy soil
- ✓ Clay soil
- ✓ Loamy soil

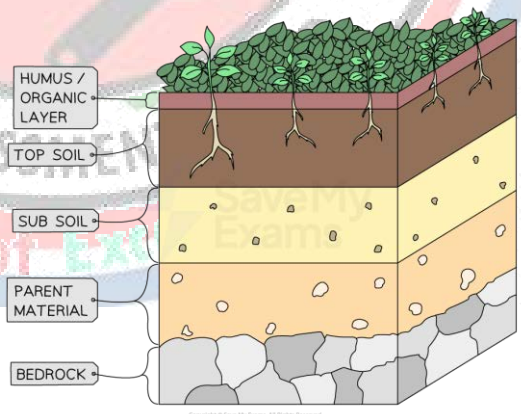
(b) Ways of determining soil texture (Any 2 × 2 marks)

- ✓ Feel test (hand texturing)
- ✓ Jar sedimentation / bottle test
- ✓ Soil ribbon test
- ✓ Ball test

SECTION B (40 MARKS)

Answer all questions in this section.

8. (a) Labelling soil profile (4 marks)



A: Topsoil (Horizon A)
B: Subsoil (Horizon B)
C: Weathered parent material (Horizon C)
D: Bedrock (Horizon D)

(b) Characteristics of each horizon (Any correct)

Horizon	Characteristics
A	Dark, rich in organic matter, most roots found here.
B	Lighter colour, accumulates leached minerals, less humus.
C	Partially weathered rocks, low fertility.

D	Solid unweathered rock; parent material.

(c) How soil profile affects crop production (Any 2 × 2 marks)

i. Determines rooting depth and strength.
ii. Influences drainage, aeration, and nutrient availability.
iii. A deep A horizon supports high productivity.

9. Explain soil properties

(a) Soil texture:
Influences drainage, aeration, and water-holding capacity, affecting crop choice.

(b) Soil structure:
Good structure improves root penetration, drainage, and nutrient movement.

(c) Soil fertility:
Determines nutrient availability for healthy crop growth.

(d) Soil porosity:
Affects oxygen levels and water movement in the soil.

10. Mixed farming in semi-arid region

(a) Suitable crops & livestock (Any reasonable)

- ✓ Crops: Sorghum, millet, cowpeas, green grams, sunflower, drought-tolerant maize.
- ✓ Livestock: Goats, sheep, indigenous chicken, camels, zebu cattle.

(b) Influence of soil & climate factors

- ✓ Low rainfall favours drought-tolerant crops and hardy livestock.
- ✓ Sandy soils require crops with low water needs.
- ✓ High temperatures reduce moisture; hardy livestock survive better.

(c) Ways to improve soil fertility & water retention

- ✓ Adding manure and compost
- ✓ Mulching
- ✓ Use of cover crops
- ✓ Minimum tillage
- ✓ Terracing / contour farming
- ✓ Water harvesting (zai pits, bunds, dams)

11. (a) Name of the farm tool (1 mark)

- ✓ Slasher

(b) Uses of tools (3 × 1 mark)

i. **Wheelbarrow** – Carrying soil, manure, seedlings, tools.
ii. **Rake** – Leveling soil; collecting leaves, trash, and stones.
iii. **Tape measure** – Measuring distances, plots, spacing.

(c) Maintenance of wheelbarrow (Any 2 × 1 mark)

- ✓ Greasing moving parts.
- ✓ Tightening bolts and nuts.
- ✓ Cleaning after use.
- ✓ Storing under shade.

(d) Dangers of incorrect tool use (2 marks)

- ✓ Causing injuries such as cuts or bruises.
- ✓ Damaging the tool.
- ✓ Reduced efficiency.

(e) Benefits of maintaining tools (2 marks)

i. Increases efficiency and ease of working.
ii. Prolongs the lifespan of tools.

NOTE TO FACILITATORS (TEACHERS):

The marking scheme provided is not exhaustive. Facilitators are advised to use their professional judgment when awarding marks. Any correct, relevant, and scientifically or contextually acceptable answer that demonstrates understanding of the concepts should be credited. Where examples are required, learners may provide other valid examples apart from those listed in the scheme.