

NTIMA, NYAKI AND MUNICIPALITY CLUSTER EVALUATION 2016
Kenya Certificate of Secondary Education (K.C.S.E)

Agriculture (443/1)
 Paper 1
 July/August 2016
MARKING SCHEME

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| <p>1. <u>Agriculture contribution to employment</u>
 - Direct employment as full time farmers
 - Indirect employment in extension services, transport industry and research stations
 (2 x ½ = 1 mk)</p> <p>2. <u>Outdated farming methods</u>
 - Shifting cultivation method
 - Nomadic pastoralism
 (2 x ½ = 1 mk)</p> <p>3. <u>Benefits of good soil structure</u>
 - Improves soil aeration
 - Improve soil water infiltration
 - Facilitates good soil water drainage
 - Allows proper root penetration
 - Improves good water holding capacity
 - Not easily eroded
 (3 x ½ = 1½ mks)</p> <p>4. <u>Effects of HIV/AIDS in agricultural production</u>
 - Shortage of farm labour due to ill health/deaths
 - Low supply of farm produce due to loss of market
 - Low purchasing power of agricultural inputs
 - Lack of motivation to invest in agriculture
 - Less time spent on farming activities
 - The NGO's and government use a lot of money managing pandemic which would be used to provide credit to farmers
 (2 x ½ = 1 mk)</p> <p>5. <u>Opportunity cost is zero</u>
 - Where there are no alternative enterprises to choose from
 - When resources are free/unlimited
 (2 x 1 = 2 mks)</p> <p>6. <u>Types of labour records</u>
 - Muster roll
 - Labour utilisation analysis
 (2 x ½ = 1 mk)</p> <p>7. <u>Labour productivity improved by</u>
 - Training
 - Farm mechanisation
 - Giving incentives and improving terms</p> | <p>and conditions of service
 - Assign specific task to labour force
 - labour supervision
 (4 x ½ = 2 mks)</p> <p>8. <u>Financial documents</u>
 - Invoice
 - Statements
 - Receipts
 - Delivery note
 - Purchase order
 (4 x ½ = 2 mks)</p> <p>9. <u>Oversowing</u>
 - Introduction of a pasture legume e.g. desmodium, in an existing grass pasture
 <u>Undersowing</u>
 - Establishment of pasture under a cover crop e.g. maize
 (1 mk)</p> <p>Mark as a whole.(If one is wrong cancels the next if right)</p> <p>10. <u>Government policies</u>
 - Subsidy of agricultural inputs
 - Heavy taxation of imports to protect local industries.
 - Quality control of goods for export & imports.
 - Conservation of natural resources
 - Stepping up the control of diseases and parasites
 (4 x ½ = 2 mks)</p> <p>11. <u>Advantages of tenancy</u>
 - The landless can rent land from landlords
 - Idle land is put in production by renting to tenants thus high production
 - Equitable distribution of land as a natural resource
 - The system reduces land disputes as landlords control its allocation
 - Landlords gets income from their tenants if they are not able to use land
 (2 x ½ = 1 mk)</p> <p>12. <u>Advantages of biological pest control</u>
 - Environmental friendly
 - Saves on labour
 - Cheap to use once established
 (2 x ½ = 1 mk)</p> <p>13. <u>Categories of tomato varieties</u></p> |
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- Fresh market varieties
 - Processing varieties
(2 x ½ = 1 mk)
14. a) Elasticity
is the degree of responsiveness of demand to change in price
(2 mks)
- b) Factors affecting elasticity of demand
- Availability of substitute
 - Degree of necessity
 - Number of uses a product can be put to
 - Time lag
 - Time span
 - Proportion of a commodity
 - Supply
(4 x ½ = 2 mks)
15. Available water to crops is:
- Capillary water
(1 x 1 = 1 mk)
16. Factors influencing soil formation
- Parent rock material
 - Climate
 - Topography
 - Biotic /organic
 - Time
(3 x ½ = 1½ mks)
17. Characteristics of crops grown for green manure
- Should be highly vegetative
 - Should have fast growth rate
 - Have high nitrogen content
 - Be capable of quick rotting
 - Are hardy and grow in poor conditions
(4 x ½ = 2 mks)
18. Advantages of timely harvesting crops
- Early harvesting reduces crop loss by poor weather condition and pests
 - Early harvesting meet high market demand
 - crop harvested at correct stage growth ensures good quality of the produce
 - Crop harvested at correct stage of growth ensure product put in its right usage
 - Theft cases are reduced
(4 x ½ = 2 mks)
19. Disadvantages of intercropping
- Yield decreases as the crops differ in their competitive abilities.
 - Difficult to manage different crop types
 - Mechanization is difficult and if not efficient
 - Harvesting of crops is difficult
 - Higher amount of fertilizer or irrigation water cannot be utilized properly as the component crops vary in their response of these resources
 - There is high competition of soil nutrients

which makes the soil infertile
(2 x ½ = 1 mk)

20. Deficiency symptoms of potassium

- Leaf curling
- Leaf chlorosis
- Premature leaf fall
- Scorched leaf edges and central parts remain green
- Stunted growth
(2 x ½ = 1 mk)

SECTION B: 20 MKS

21. a) Identity of the pest

- A cut worm
(1 x 1 = 1 mk)

b) Damage caused by a cutworm on crops

- Cutworm damages crop by cutting the stem at the base of seedling after transplanting
(1 x 1 = 1 mk)

c) Method of controlling the cut worms

- Chemical method - mixing appropriate insecticide powder with soil in each hole during transplanting
(1 x 1 = 1 mk)

d) Other insect pests that attack Kales other than cutworm

- Aphids
- Sawfly
- Armyworm
(2 x 1 = 2 mks)

22. a) Ways of including the rooting of plantlets

- Use of growth regulators
- Use of culture medium with correct nutrients
- Correct light intensity
- Correct temperature
- Ensuring correct relative humidity
(2 x 1 = 2 mks)

b) Steps followed in development of tissue culture

- Cutting of plants, cells on sterile jelly
- Development of callus on jelly with hormones to stimulate the growth of shoots or roots
- Hardening of the plantlets in a greenhouse
(3 x 1 = 3mks)

c) Advantages of propagating crops by tissue culture technique

- Mass production of propagules
- Faster methods of multiplying planting materials
- Requires less space
- Pathogens free plants are produced
- Maintains genetic potential/uniformity

- Improve yields (1 x 1 = 1 mk)

23. a) Physical soil erosion control method

- Cut-off drain (1 x 1 = 1mk)

b) Name the part D labelled on the diagram

- Grass on the embankment /embankment (1 x 1 = 1 mk)

c) Four places where water from a cut-off drain is discharged into:

- Into a natural waterway such as a river
- Onto a non-erodable stony or rocky ground
- Onto grassland with well established grass cover
- Into an artificial waterway (4 x ½ = 2 mks)

24. Partial budget

25. a) Activities undertaken in minimum tillage

- Use of herbicides to control weeds
- Mulching
- Establishment of covercrops in the fields to smother weeds
- Uprooting and slashing of weeds
- Selective cultivation/restricting cultivation to area where seeds are to be planted
- Timing cultivation (any 5 x 1 = 5mks)

b) Qualities of a good farm manager

- Has knowledge about specific agricultural principles, marketing and accounting
- Hardworking and time conscious
- Has practical farming skills
- Flexible in decision making
- Should be responsible/dynamic/prudent/competent/ambitious (any 5 x 1 = 5 mks)

c) Ways in which farmers may overcome

Debit(-)	Credit(+)
a) Extra costs	a) Cost saved
-Tractor hire	labour costs
(600 x 6) ✓ ½ =3600	80 x 30 x 6 = 14,400
- Harvest costs	i.e 14,400 ✓ ½
(1200 x 6) =7200 ✓ ½	
TOTAL = 10,800 ✓ ½	
b) Revenue foregone	b) Extra Revenue
800 x 60=48,000 ✓ ½	sales of beans
	(1200 x 60 =72,000
	i.e 72,000 ✓ ½
TOTAL=58,800 ✓ 1	TOTAL = 86,400 ✓ 1

risks and uncertainties in a farming business

- Diversification : having various enterprise so that if one falls, the farmer has something to rely on
- Contract production: growing crops on contract with the consumer with assurance of the market
- Input rationing: use of inputs sparingly to avoid wastage/incurring unnecessary expenses
- Flexibility in production: being able to make alternatives in farming schedules
- Selecting more certain enterprises: embarking on enterprise with less risk
- Insurance: insuring the enterprise that in case of any loss the farmer gets compensation
- Adopting modern methods of farming i.e. irrigating crop rotation and animal husbandry practice
- Use of government price stabilization policies (any 5 x 2 = 10 mks)

26. a) Ways through which soil loses fertility

- Soil erosion
 - Carries away useful soil microorganism
 - Carry away top soil that is rich in nutrient
 - Leaching
 - Nutrients are carried by infiltrating water deep into the lower horizons from reach by plant roots
 - Monocropping
 - Leads to accumulation of crop pests/diseases
 - Leads to exhaustion of nutrients needed by the particular crop.
 - Salinisation
 - May cause death of useful soil micro-organisms
 - Cause an osmotic imbalance between the plant cells and soil solution making the plant unable to absorb water
 - Change of soil PH
 - May inhibit activity of useful micro-organisms
 - May not support growth of some crops
 - May make some nutrients unavailable for plant use
 - Uptake by plants
 - Use of micro-organisms
 - Formation of hood pans
 - Burning of vegetation /volatilization
- b) Factors that determine the quality of farmyard manure

- i) Method of storage
 - ii) Type of litter used
 - iii) Degree of decomposition/age of manure
 - iv) Age of the animal
 - v) Quality of food given to the animal
 - vi) Species of the animal
- c) Production of sorghum
Seedbed preparation
- Clearing of the land early
 - Deep ploughing of the land to remove perennial weeds
 - Harrowing to obtain fine tilth
 - Firm the seedbed before planting
- ii) Planting
- Early planting at the onset of rains
 - Use certified seeds
 - Broadcasting of seeds or in rows
 - Spacing if rows planted is 60 cm x 15 cm
 - Depth of planting 2.5 - 5.0 cm
 - Seedrate 2 - 15 kg/ha depending on variety and method of planting
27. a) Problems facing agricultural co-operative societies
- Corruption in day to day activities
 - Embezzlement of funds
 - Lack of qualified management staff
 - Improper keeping of records
 - Mistrust by members
 - Lack of funds to finance its functions
 - Difficulties in collection, transportation, storage, processing of members farm products
 - Difficulties in marketing agricultural products for members due to price fluctuations, dictations, quota systems.
 - Stiff competition from other similar cooperative dealing with the same farm products
 - Government policies, regulations that frustrate efforts of members.
 - Lack of repayment of loans given to members due to crop failures
 - Currency devaluations leading to difficulties in paying of dividends, importing of farm inputs
- (any 10 x 1 = 10 mks)
- b) Classification of pesticides according to their mode of action
- i) Stomach poisons
- Kill in being ingested
 - Used in seed dressing against soil pests
 - Kills biting insects and rodents
- ii) Systematic pesticides
- Sprayed on plant leaves/stems then translocated to all parts of the plant
 - Kills insects with sucking mouth parts

- iii) Contact pesticides
- Applied as fine sprays on pests body/ foliage
 - Absorbed by skin of pest
 - Selective in action
- iv) Suffocation
- Applied as fumigants and interferes with pest's respiration
 - Applied in store or injected into soil
- v) Antifeedants
- Inhibit feeding in insects and other pests thus starving them to death
- vi) Repellants
- Keep pests away from plant
(any 5 x 2 = 10 mks) well discussed