KENYA NATIONAL EXAMINATION COUNCIL

KCSE 2007

AGRICULTURE
PAPER 1
MARKING SCHEME

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Agriculture Paper 1

1.
- Swampy / water logged areas.
- Stony ground.
- Steep areas.
- Aridity/dryness.
- Eroded/bare land.
- Tsetse fly infested areas.
- Bushy land.

(Any 4 x $^1/_2$ = 2 marks)

2.
- Wind.
- Glaciation / Ice.
- Temperature.
- Running water.

(Any 3 x $^1/_2$ = $1^1/_2$ marks)

3.
- By mixing soil with water, shaking/stirring and allowing the particles to settle/ sedimentation.
- By the use of a series of sieves with different mesh sizes. *(2 x $^1/_2$ = 1 mark)*

4.
- Minimises land disputes with neighbours/ensures ownership.
- Used as security to obtain loans.
- Encourages the farmer to carry out long term investment on the land.
- The farmer can lawfully lease all or part of the land to earn extra income.

(Any 2 x $^1/_2$ = 1 mark)

5.
- Controls weeds.
- Controls crop pests.
- Controls crop diseases.
- Maximises use of soil nutrients.
- Reduces soil erosion/improves soil structure.
- Improves N – status in the soil, when legumes are included in the programme / maintains soil fertility.

(Any 4 x $^1/_2$ = 2 marks)

6.
- Where the pest is found.
- Feeding habits/types of damage.
- Scientific/biological classification.
- Crop attacked.
- Stage of development of the pest at which it causes damage.
- Stage of growth at which the crop is attacked.
- Part of the crop attacked.

(Any 4 x $^1/_2$ = 2 marks)

7.
- Assists the development of the meristematic tissues.
- Facilitates fruit setting.
- Helps in translocation of sugar, nitrogen and phosphorous.
- Facilitates nodule formation in legumes.
- Regulates carbohydrate metabolism.
- Facilitates the absorption of water.
- Facilitates formation of pollen tubes.

(Any 3 x $^1/_2$ = $1^1/_2$ marks)

8.
- Improved infra-structure.
- High per capita income / improved living standards.
- Increased recreational facilities.
- More and better social services/amenities provided to citizens.

- Better and efficient production methods and services/ improved technology.

9. *(Any 4 x $^1/_2$ = 2 marks)*

- Demand for the commodity.
- Supply for the commodity.
- Price of the related commodities.
- Cost of producing the commodity.
- Tastes and preferences for the commodity.

10. *(Any 3 x $^1/_2$ = $1^1/_2$ marks)*

- Lucerne/Alfalfa.
- Clover/Kenya white clover/Louisiana white clover/subterranean clover.
- Desmodium/green desmodium /silver leaf desmodium.
- Sunn hemp.
- Calliandra.
- Sesbania.
- Leucaenia.

11. *(Any 3 x $^1/_2$ = $1^1/_2$ marks)*

- Number of animals one intends to feed.
- Length of dry season the material is intended to cater for.
- Amount of plant materials available for ensiling.
- Bulkiness of the material.

12. *(Any 2 x $^1/_2$ = 1 mark)*

- To ensure higher quality/palatability of forage.
- To ensure higher quantity of foliage.
- Minimises the incidence of poisonous weeds to livestock such as thorn apple.
- Minimises competition for light, water and nutrients.
- Minimises the spread of pests and diseases.
- To minimise the cost of production.
- To minimise spread of disease.

13. *(Any 3 x $^1/_2$ = $1^1/_2$ marks)*

- Proper soil depth.
- Well aerated soil.
- Good water holding capacity.
- Adequate supply of plant nutrients.
- Good cation exchange capacity.
- Well drained soil/ good infiltration rate.
- Absence of soil pests/disease/weeds.
- Appropriate soil pH range.

14. *(Any 6 x $^1/_2$ = 3 marks)*

- Should have a high germination percentage/ should be viable.
- Should have high vigour.
- Should be free from pests/diseases/ should be healthy.
- Should not have any physical damage.
- Should be clean/physically pure/ not mixed with other impurities.
- Should be uniform in size, colour and shape.

15. *(Any 5 x $^1/_2$ = $2^1/_2$ marks)*

(a)

- Digging up and down the slope.
- Overstocking/ overgrazing.
- Lack of ground cover/bare land.
- Clean weeding/ deforestation/ burning vegetation.
- Cultivating along river banks.
- Cultivating on steep slopes.
- Over irrigation/ uncontrolled irrigation.

(Any 4 x $^1/_2$ = 2 marks)

(b)

- **V:** shaped gullies.

- **U:** shaped gullies. *(2 x ½ = 1 mark)*

16. (a)

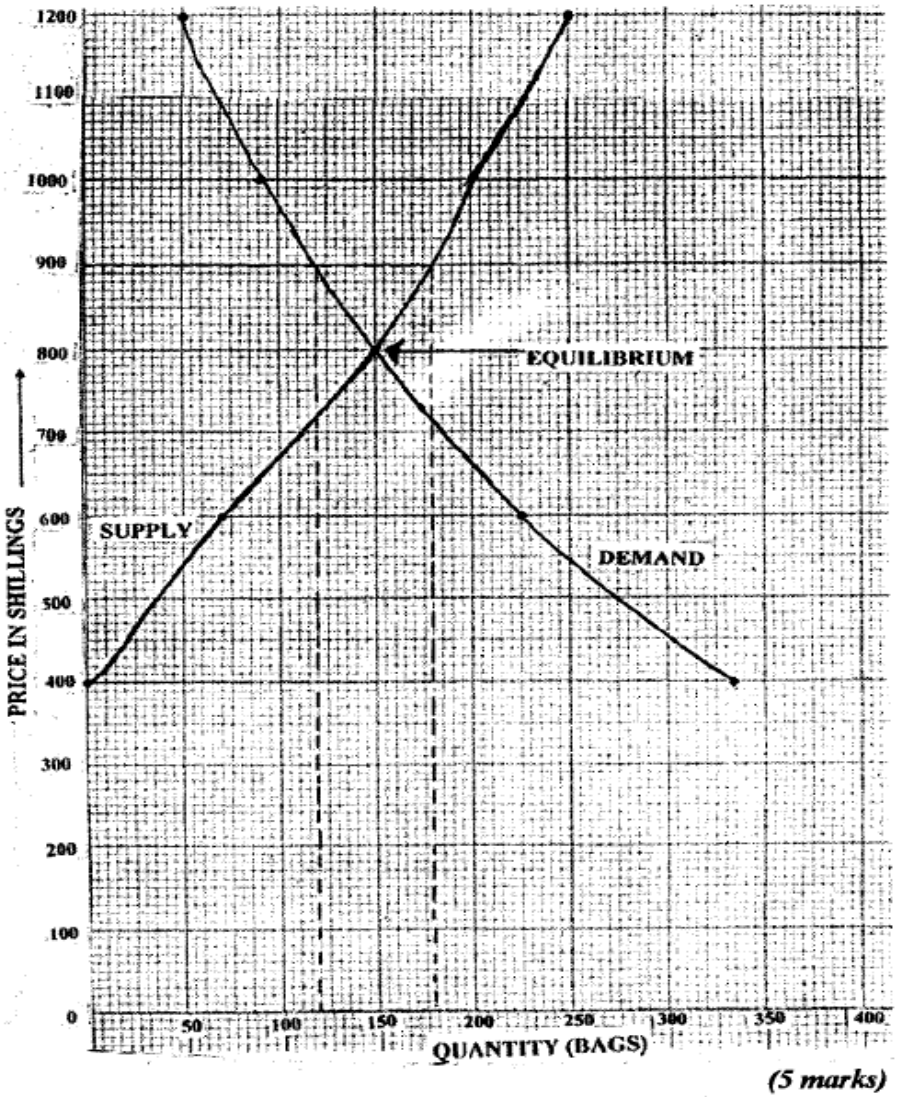
- Good farm planning.
- Rotational programmes can be easily effected.
- Mechanization is possible because the areas are large.
- Cheaper to register the land.
- It saves on farm operations/ cost of operation.
- Agricultural extension officers can easily inspect the whole farm and give advice.
- It encourages the farmers to invest on land / carry out long term projects.
- Ensures effective supervision by the farmers;
- Saves on time spent in movement. *(Any 4 x ½ = 2 marks)*

(b)

- Enable the land-owner/landlord to earn income from the land.
- Enables people who have no land to have access to farming land.
- Land that would otherwise be idle is put into productive use.
- Enables the tenant to increase or decrease the acreage of land leased depending on profitability. *(Any 2 x ½ = 1 mark)*

17.

(a)



(5 marks)

(b) The equilibrium price of the potatoes is Ksh 800/=. *(1 x 1 = 1 mark)*

(c) (i) 120 bags of potatoes would be bought. *(1 x 1 = 1 mark)*

(ii) The price would be Ksh 900/=. *(1 x 1 = 1 mark)*

18. (a)

- A_1: Root stock. *(1 x 1 = 1 mark)*
- A_2: Scion. *(1 x 1 = 1 mark)*

(b)

- A_3 : Grafting/whip grafting. *(1 mark)*
- **B** : Ground layering/ trench layering. *(Any 1 x 1 = 1 mark)*

19.

- C_1: Maize weevil, Maize stalk borer, Pink bollworm. *(Any 1 x 1 = 1 mark)*
- C_2 : White leaf blight, Maize streak, Rust. *(Any 1 x 1 = 1 mark)*

20. (a) $P_2O_5 = 20\%$ *(1 x 1 = 1 mark)*

(b) 10,000 m^2 require 300 kg fertilizer.

$\therefore$ (10 x 5) m^2 would require $\frac{50 \times 300}{10,000}$

= 1.5kg/1500g fertilizer *(2 marks)*

21. (a) Single stem pruning. *(1 x 1 = 1 mark)*

(b) The mainstream of seedling is capped to encourage suckers to grow. 2 or 3 healthy suckers are selected and allowed to grow while the rest are removed. The selected suckers should form a "U" shape between them to avoid splitting. *(2 x 1 = 2 marks)*

22. (a) (i) ***Land preparation***

- Clear the land.
- Divide the land into plots of 0.4 ha.
- Construct/repair the banks/bunds.
- Construct/repair inlet and outlet channels.
- Flood the field 4 days before rotavation/ digging.
- Flooding should be done until water level is about 7.5 - 10 cm above the soil surface.
- Carry out primary cultivation/ digging/ rotavation.
- Puddle the soil to the required tilth.
- Heap the weeds/trash along the bunds/banks.
- Level the field by dragging a board/use a jembe to obtain a level seedbed. *(Any 7 x 1 = 7 marks)*

(ii) ***Water control***

- Introduce water into the field to a depth of 7.5 – 10 cm before primary cultivation.
- Leave the field submerged for 4 days.
- At the time of transplanting, leave a thin film of water for about 1 week.
- Introduce water gradually into the field as the crop establishes.
- Maintain the water level at $^1/_3$ the height of the crop up to 3 weeks before harvesting.
- Water should be changed every 2-3 weeks or when cold.
- Remove / drain water 3 weeks before harvesting.
- Water should flow slowly through the field. *(Any 6 x 1 = 6 marks)*

(b)

- Regular watering of young seedlings.
- Control of weeds.

- Thinning of young trees and felling of older trees to allow adequate space for growth.
- Pruning of dead wood and branches obstructing access areas.
- Controls of pests.
- Control of diseases.
- Protection against forest fires by digging trenches/clearing land round the farm.
- Construction of structures to protect trees from damage by animals.
- Construction of water micro-catchment structures around the trees.
- Provision of shade and mulch after transplanting.
- Grafting / budding of old trees.
- Application of manure/ fertilizers. ***(Any 7 x 1 = 7 marks)***

23. (a)

- Statutory interference by the Government in agricultural marketing causing artificial shortages.
- Poor training for people involved in marketing leading to heavy losses to farmers.
- Bulkiness of most agricultural produce making transportation difficult and expensive.
- High perishability of most agricultural produce leading to low quality.
- Seasonality of agricultural produce leading to price fluctuations.
- Inadequate storage facilities leading to heavy losses of produce.
- Poor infrastructure leading to high transport costs and spoilage of agricultural produce.
- Change in market demand due to time lag between production and marketing.
- Change of supply of agricultural produce leading to fluctuation of market prices.
- Inadequate market information to farmers leading to selling of farm produce when the prices are low.
- Lack of capital to finance various marketing functions, for example: advertising and transportation.
- Competition with synthetic products leading to loss of market.

(Any 10 x 1 = 10 marks)

(b)

- The farmer can be able to predict the profitability of an enterprise.
- It enables the farmer to detect problems easily so that correction is done in good time before losses are incurred.
- Assists the farmer to make management decisions especially when comparing two alternative projects.
- Helps the farmer in making effective changes in the organisation.
- Ensures a periodic analysis of the farm business.
- Helps in estimating the required production resources such as labour and capital.
- Helps in deciding the viability of an enterprise.
- Assists the farmer when negotiating for agricultural credit.
- Encourages the farmer to be efficient with the aim of meeting the projected targets.
- Helps in controlling various aspects of production in the farm.
- Acts as a record which can be used for the future. ***(10 x 1 = 10 marks)***

24. (a)

- It makes it possible for crops to be produced during the dry season.
- It makes it possible to reclaim land for agricultural production.
- It supplements rainfall in crop production.
- Sustains proper growth of crops which require plenty of water, for example: rice.
- Creates favourable temperature for proper plant growth.
- Facilitates supply of fertilizer in irrigation water/ fertigation.
- Facilitates the production of crops in arid and semi-arid areas where without irrigation, crop production would be impossible.
- It makes it possible to grow crops in special structures, for example: green houses

(Any 6 x 1 = 12 marks)

(b)

- The nature of the land (steep or flat) / topography.
- The type of soil.
- The availability of water to be used.
- The type of crop to be irrigated because some crops need larger amounts of water while others need little and others need moderate amounts of water.
- The distance of the water source from the field to be irrigated.
- The technology available.
- The cost of the system to use.
- The climate of the area.
- Availability of skilled manpower.

(Any 8 x 1 = 8 marks)

(c) Volume of water in cylinder is the volume of y when x = 0

$y = 12.5 \times 0 + 58$

$= 58$

(10 marks)