FORM FOUR CLUSTER KCSE MODEL 4

AGRICULTURE PAPER 1 ANSWERS

SECTION A (30 Marks)

1. Roles of water in plants.

-Solvent for nutrients.

- Facilitates cooling in plants.

-Essential raw materials in plants.

-Constituent of the plant protoplasm/make the plant cell turgid.

2. Why drainage is important in a water logged land.

-Increase soil volume.

- Helps to increase soil temperature.

- Increase soil microbial activities.

- To reduce toxic substances from the soil.

- Facilitates increase in soil aeration.

3. State TWO reasons why the top soil layer of the soil profile should be maintained.

- Facilitates suitable soil temperature due to the presence of organic matter/darker colour.

-To maintain high level of microbial activities suitable for decomposition of organic matter.

- In order to maintain high level of organic matter in the soil.

- In order to maintain high level soil nutrients.

4. Reasons for keeping proper labour records.

land; - Helps to determine the type of labour used on the farm.

-Helps in calculation of the gross margin of the farm.

-Helps to determine the labour allocation.

- Helps to determine the peak period of labour requirement. (2x½=1mark)

5. Ways in which continuous cropping can lead to low soil fertility.

-When crops are harvested, they remove large amount of nutrients from the soil.

- Where crops are planted continuously, soil structure is destroyed.

6. (a) Distinguish between extensive and intensive farming.

- Extensive farming involves the production of crops and livestock on large tracts of

while intensive farming involves maximum utili8sation of the available land for maximum production. (1x1-1mark)

N/B mark as a whole.

(b) Characteristics of extensive farming:

- Low capital investment.

- Low labour requirement per unit area.

- Low yields per unit area of land.

9. Factors that may influence supply of casual labour.

- The nature of the work. o Amount of money paid to the workers/wages.

- The number of people in the labour market.

- The ability or skills of the labour force.

- The working conditions/incentives. (3x½=1½marks)

10. (a) What do you understand by soil liming?

- Is the application of agricultural lime to an acidic soil in order to amend it.

(b) Reasons why liming should be done.

- It removes toxic substances/elements such as aluminium from acid soil.

- It improves soil structure through flocculation of soil particles.

- It reduces the acidity of the soil. o It hastens the decomposition of organic matter.

- It avails nutrients like nitrogen and phosphorous in absorbable form.

- Improves nodulation in legumes.

11. (a) Mechanical methods of weed control:

-Tillage/cultivation.

- Slashing.

- Mowing.

- Uprooting.

(b) Advantages of chemical methods of weed control

- Requires less labour.

- Can be used to control weeds that are difficult to control

- Do not disturb root crops.

- Make control of closely spaced of crops easier e.g. wheat.

- Efficient even in very wet or dry soil conditions

- It is cheaper in the long run.

- Saves time as large areas can be effectively covered

- Maintains the soil structure because it does disturb the soil. (3x½=1½marks)

13. (a) TWO ways in which the household and firm are related.

- The household supplies factors of production such as labour to the firm.

- The firm produces goods and services and sells to the household.

- The household receives income from the supply of raw materials in the production.

- The household supplies raw materials in the production of goods. (2x½=1mark)

(b) Agricultural support services available to farmers

- Extension and research services.

- Artificial insemination services.

- Banking services.

- Education and training

- Insurance services.

-Marketing services.

-Tractor hire services.

- Credit services.

14. Factors that lead to poor establishment of seedlings after transplanting them:

- Transplanting when it is hot.

- Pest attack:-immediately after transplanting/attack by the cutworms.

- Low soil moisture.

-Transplanting very young seedlings/weak seedlings.

- Failure to water the seedlings before uprooting them/uprooting the seedlings without

the ball of earth around the roots.

15. Why land clearing is an important practice in crop farming:

- Provides suitable condition for subsequent farm operations e.g. ploughing.

- Creates suitable condition for growing of crops.

- Helps to destroy the breeding sites for pests/ parasites.

16. Factors that determine the correct stage at which crops are harvested.

- Purpose of the crop.

- Market demand.

- Concentration of the required chemicals.

-Weather conditions.

17. (a) Harmful effects of crop pests:

-Some un earth planted seeds e.g. squirrels leading to low plant population.

-Some suck the sap leading to retarded growth.

- Some destroy the crop leaves lowering photosynthetic area, hence reducesyields.

- Some damage roots e.g. nematodes leading to wilting

(b) THREE examples of pests classified as rodents.

- Mice.

- Squirrels.

- Porcupines.

- Moles.

18. Disadvantages of zero-grazing:

- High initial capital.

- High management skills are needed

- Need a lot of labour.

- Diseases can be easily con.

- Disease can easily spread.

19. Precautions observed when harvesting pyrethrum:

- Use woven baskets to a void fermentation of flowers.

- Handle flowers carefully to avoid damage.

- Dry flowers immediately after picking to prevent fermentation.

- Do not pick with wet flowers.

- Avoid any contamination.

SECTION B (20 Marks)

20. (a) A-Water softening chamber

B- Co-agulation and sedimentation chamber.

C-Filtration chamber. D-Storage tank.

(b) (i) A: Softening of water by use of soda ash.

(ii)B: Removing of all the solid impurities.

(iii) C: Addition of chlorine to kill the micro-organisms for water borne diseases

(iv) D: Storage of treated water. (4x1=4 marks)

(c) (i) American bollworm.

(ii) Larval stage.

(iii) Control measures o Spraying using an appropriate pesticide/insecticide.

21. (a) Transverse method.

(b) Soil sampling procedure.

- Clear the vegetation from the soil sampling area.

-Make a vertical cut using soil auger to a depth of 15-25 cm for crop land and 5 cm for pasture land.

- Take a slice of soil from a vertical cut using a spade.

- Put the soil in the polythene bag.

- Repeat the above steps in different parts of the field.

- Mix the soil from different parts, dry and crush.

- Take sub-sample from the mixture to form a representative sample. (6x1=6marks)

N/B Marking stops where the procedure becomes wrong.

SECTION C (40 Marks)

22. (a) Individual land operator.

- Is where the farmer owns and operates his land. (2x1=2marks)

(b) Disadvantages of individual owner operator.

-Lead to increase in government costs for extension services.

- Where a farmer uses a title deed to acquire loan and if its not repaid land may be

sold.

- May lead in equality in land ownership hence poor distribution.

- It encourages land fragmentation. (4x1=4 marks)

(c) Reasons for establishing the million acre scheme.

- To maintain production levels achieved by farmer white settlers.

- To transfer land from the white settlers to the Africans.

- To settle the former employees of European farmers and squatters.

- To increase Agricultural production through better methods of land ownership.

- To ease population pressure on land by transferring people from over-populated areas

to sparsely populated areas.

- To create employment by working on farms given to produce crops and livestock.

- To make use of under-utilized/idle land so as to increase production.(6x2=12 marks

23. (a) Factors that influence spacing of crops:

- Growth habit of the crop: crops that spread/tiller/creep/tall may require wider spacing

than those that do not.

- Intended use/purpose of the crop: maize for silage is planted at a closer spacing than

that for grain production.

- Type of machinery to be used: spacing should allow passage for various operations

such as weed control.

- Soil fertility: a fertile soil allows for closer spacing compared to poor soils.

-Moisture content of the soil: high moisture content of the soil may allow closer spacing

but in low moisture content. Wider spacing should be done.

- Inter-planted crops: where crops are inter-planted wider spacing should be done.

- Diseases control: rosette virus/viral disease should be controlled by close

spacing.(5x2=10marks)

(b) Qualities of a good soil structure.

- Should facilitate good soil drainage hence avoid water logging conditions.

- Should ensure adequate water penetration and retention.

- Should ensure proper aeration for proper root growth and microbial activities.

- Should ensure good root penetration and development

- Should ensure proper heat transfer in the soil.

- Should create favourable conditions for microbial/activity.

- Should make it easy to carry out land tillage practices.

- Should resist excessive leaching of nutrients.

24. (a) Various ways in which diseases can be controlled in crops:

- Crop rotation to break down the life cycle of diseases pathogens.

- Heat treatment to kill the micro-organisms that cause diseases.

- Close season to break down the life cycle of the disease pathogens/starve the disease

pathogens to death

- Early planting/timely planting to enable the crop to establish earlier than the storage

of disease attack.

- Seed Quarantine to prevent introduction of pathogens into the farm from other areas.

- Application of appropriate chemical to kill the pathogens.

- Proper spacing to minimize the spread of the disease in some crops.

- Weed control to prevent them from habouring some pathogens.

- Use of resistant varieties which have natural mechanism of disease resistantance

- Proper plant nutrition/application of manure and artificial fertilizers to prevent deficiency diseases and facilitate vigorous growth in plants.

- Pruning to create unfavourable micro-climate for some disease pathogens to survive.

- Use of clean equipment's to reduce chances of contamination of planting materials.

(Ten well explained points 10x1=10marks)

(b) Management practices carried out a field of pasture.

- Gapping/re-seeding to maintain the correct plant population/to prevent the formation

of rank spots that lead to invasion of weeds.

- Controlling of weeds to avoid competition for nutrients/improve the quality of forage.

- Cutting back/practicing right grazing in the initial phase of establishment to encourage lateral growth.

- Top dressing with nitrogenous fertilizers / manure to replenish soil nutrients/to improve the quality of posture.

- Topping to stimulate better growth. (Any 5 well explained =5x2=10 marks)