AGRICULTURE FORM 4

PAPER 1

TRIAL 2, 2019

MARKING SCHEME

1. Field management for optimum plant population
   - Gapping
   - Thinning (2 x½=1mk)
2. Factors that characterize small scale farming
   - Requires small piece of land
   - Low capital investment
   - Low yields
   - Simple farm tools /equipment's (2 x ½=1mk)
3. a) Metal pipes
   - Galvanized iron pipes
   - Alluminum pipes (1 x ½mk)

   b) Hose pipes
   - Rubber hose pipe
   - Plastic hose pipe (1 x ½mk)
4. Forms Horticulture practices
   - Pomology /pomo-culture
   - Olericulture
   - Floriculture (3 x½=1½mks)
5. Disadvantages of growing one crop on a piece of continuously

- Build up pest and disease
- Build up weeds
- depletion of minerals specific to the crop
- Destroys soil structure (4 x ½=2mks)

6. Qualities of a good mother plant for vegetative propagation
   - Healthy /free diseases/pests
   - Tolerance to salinity
   - Compatible to variety of scion
   - numerous root system
   - High yielding
   - Production of quality products
   - vigorous /fast growing (4 x ½=2mks)
7. – alternating different families of crops, makes it easy to control /remove the weeds
   - Weeds specific to certain crops are easily controlled by alternating the crops of different type eg. strigaspecific to grass.
   - Alternating difficult to weed crops with easy to weeds-maker it easily to control weeds (2 x ½==1mk)
8. Reasons for imposing quarantine on planting materials
   - Prevent introduction weeds
   - Prevent introduction of pests and diseases from other countries (2 x½=1mk)
9. Mechanical method of separating soil particles

   Sieving using sieves of different sizes
   - Dissolving soil in jar of water, shaking and allowing it to settle down (2 x ½=1mk)
10. Settlement schemes in Kenya as result of success of million acre
    - Jet schemes
    - Harakaschemes
    - Shirikaschemes
    - Larisettlement schemes
    - Squatters' settlement schemes
    - Z -plots
    - Harambee schemes

- Olkalou salient scheme (4 x ½=2mks)

11. Practices which encourages soil erosion
    - Overstocking
    - Burning vegetation cover
    - deforestation
    - Planting annual crops on steep slopes
    - Ploughing up and down the slope
    - Clean weeding leaving the land unprotected. (3 x ½=1½mk)
12. Characteristics of good vegetable seedling
    - Free from pests and disease
    - Vigorous growth
    - Free from physical deformities
    - Correct stage of growth/height 10-15cm, 4-6 true leaves (4 x ½=2mk)
13. Posts –Harvest practices
    - Drying
    - Dusting /seed dressing
    - Sorting and grading
    - Processing
    - Packing (4 x ½=2mk)
14. Environmental factors affecting crop production
    - Rainfall
    - Temperatures
    - Wind
    - Soil type (4 x ½=2mk)
15. Reasons for seed selection
    - High quality
    - High yield
    - High germination rate
    - To reduce chances of disease/pest attackCrops / avoid spread of weeds
    - Seeds that can grow in specific area (4 x ½=2mk)
16. Benefits of top dressing grass pasture

- Replenish the soil nutrients
- High herbage yields
- High herbage nutritive value
- Improve chemical and physical condition of the soil
- Enable microbial to break organic matter (2 x ½=1mk)

17. Disadvantages of communal land tenure system
    - Difficult to control pest/parasites/disease
    - No incentive to conserve land
    - Difficult to make sound farm plan
    - Difficult to control breeding in livestock
    - Land disputes are common
    - An individual cannot use land to get loan (4 x ½mk)
18. Benefits of correct plant population
    - Obtain high quality crop
    - Obtain high yields
    - Help the farmer to control soil erosion/ soil and water conservation (2 x ½=1mk)
19. – Opportunity cost is the value of foregone best alternative/revenue as result of choosing the best alternative. (1 x 1=1mk)
20. Details of tittle deed
    - Name of owner
    - Size of land
    - Land parcel number/location
    - Type of ownerships
    - Kind of right of owning land
    - Seal of issuing officer
    - Date of registration
    - Signature of issuing officer/name of officer (4 x ½=2mk)

SECTION B (20MKS)

21. a) Sample S_1 (1 x 1=1mk)

    b) Sample S_8 (1 x 1=1mk)

c) – Application of lime

- Application of basic fertilizer (2 x 1=2mks)

d) Sample S_3 (1 x 1=1mk)

22. a) Chitting/sprouting (1 x 1=1mk)

b) – Arrange seed potato in layers of 2/3 deep in partially dark room

- Arrange the seeds with rose and facing upwards and heel end downwards

- Allow diffused light through. (3 x 1=3mks)

23. a) Weed A – Couch grass /*Digitariascalarum*

Weed B – Wondering jew/*Commelinaspp*

Weed C – Nut grass / *Cyperusrotundus* (3 x 1=3mks)

b) – Underground rhizomes/structure

- Ability to propagate vegetatively (1 x 1=1mk)

c) – Livestock feed

- Vegetable for human beings (1 x 1=1mk)

24. a) – Tethering x1x1 (1mk)

b) – Few animals can be reared by this method

- Animal can strangle itself to death (2 x 1=2mks

25. a) Squirrel (1 x 1=1mk)

b) Planting time (1 x 1=1mk)

c) Unearth seeds/eat reducing the plant population (1 x 1=1mk)

SECTION C (40MKS)

26. a) Influence of Biotic factor on crop production

- Pest – They feed on part /whole plant reducing the yields
  Transmit diseases to crops
- Parasites – Transmit diseases to livestock / suck blood leading to anaemia
- Decomposers – Break down organ matter releasing nutrients to plant
- Pathogens – Transmit diseases to crops and livestock
- Predators – They kill other animals/some eat pest reducing population.

- Pollinators – transfer pollen grains from plant to plant causing pollination and fertilization.
- Nitrogen fixing bacteria – convert atmospheric nitrogen to nitrate –making it available to plant

  Stating 5 x =5mks

  Explaining 5x1=5mks

b) How Government policy improves Agricultural production

- Land reform policy to enable improve land ownership
- Provision of extension services/education
- Help control parasites/diseases and weeds effectively
- Provision of storage facilities for bulky commodities
- Establish openers to supply inputs and market Agricultural goods.
- Provide subsidies on Agricultural inputs
- Impose high taxation on imports to protect local Agricultural products
- Improve laws toregulate quality of Agriculture
- Facilitate conservation of naturalresources
- Establish national food security (4 x 1=4mks)

c) Properties of nitrogenous fertilizers

- They are highly soluble in soil water
- They are easily leached to lower horizons
- They have short residual effect hence need frequent application
- They are highly volatile, they should be applied on moist soil
- They have burning effect, they burn the vegetation part, they should not come into contact with green part.
- They are hygroscopic they absorb atmosphericvapour and cake
- They are highly corrosive, they burn the epithelial cells of palm

  (6 clearly explain/deserved one mark) (6 x 1=6mks)

  Note: The underlined is a must to score.

d) Importance of irrigation

- Improves crops yields
- Ensure steady supply of food throughout the year

- Maximum utilization of resources where the soil is fertile
- Reclamation of arid/semi-arid areas/land
- Provide regular and adequate supply of water
- Source of employment in areas where it is used extensively
- Promote crop production for export
- Allow growing of paddy rice
- Allow growing of crops in green houses (5 x 1=5mks)

27. a) Effects of pests on beans

- Some pests transmit disease e.gaphids
- Some pest eat growing points causing stunted growth
- Some pests eats pods/fruit lowering the quality/quantity of crop
- Some pest eats roots, damage/causing wilting
- Some pests injure the plant causing wound which allow germs to enter the plant
- Some pests eat the seeds in the soil reducing plant population.
- Some insect toxic substances into the plant resulting ……growth (4 x 1=4mks)

b) i) Production of cabbage

Seedbed preparation

- Prepare the land during dry period
- Clear the vegetation
- Remove the stumps
- dig deeply to remove perennial weeds
- harrow the land to medium tilth (3 x 1=3mks)

ii) Transplanting

- Transplant at the onset of rain
- Transplant seedlings are 1 month old 10-15cm /Have 4-6 true leaves
- Select healthy seedlings
- Select vigorous growing seedlings
- Dig transplanting holes 60cm by 60cm
- Use phosphate fertilizer
- Water the nursery before uprooting the seedlings

- Use garden trowel/ uproot seedlings with ball of soil round the root zone to avoid damage
- Place the seedlings in the hole and fill with soil up the level of soil in the nursery
- Firm the soil around the base of seeding
- Put shade if necessary (4 x 1=4mks)

c) Nursery management cabbage seedling in the nursery

- Water nursery frequently, with enough water morning an evening
- Uproot the weeds to avoid nutrients competition
- Control pest by use of appropriate pesticide
- Erect a shade to prevent sunlight from scorching the seedlings
- Control diseases by use of appropriate fungicides
- Carrying out thinning to avoid competition for nutrients
- Remove the much as seeds start germinating (5 x 1=5mks)

Clearly explained to score

d) Treating water to remove solid impurities

- Filtration at the intake, water passes through series of sieves to remove solid particles.
  - ➢ coagulation and sedimentation
- Allum is added to coagulate solid particles to settle down
- Filtrating tank-water passes through tank lined with different types of sand to remove the remaining solid particles (4 x 1=4mks)

28. a) – Grass cover reduces the speed of run off which lowers the erosive power of run-off

- Grass cover reduces/intercepts the impact of raindrops which reduces splash erosion
- Grass cover protects soil surface hence reducing wind erosions
- Grass roots hold soil particles together from being carried always by erosion agents.
- Grass cover reduces speed of run-off there by increases infiltration of water
- Organic matter from grass improves soil structure which improves infiltration rate of water, hence reducing erosive power of run-off (5 x 1=5mks)

NB/must be explanations not stating

b) i) – Clear land and remove stumps

- Remove all the perennial weeds/plough/dig in dry seasons
- Carry out secondary cultivation

- Harrow to medium tilth (3 x 1=3mks)

ii) Select suitable maize variety to the environment.

- Dig holes 2.5cm -10cm deep depending on soil moisture
- Digat spacing 23-50cm x 75-90cm apart
- Apply phosphate fertilizer
- Apply phosphate fertilizer at 120kg/hectare
- Place 2 seeds per hole
- Plant certified /healthy seeds (6 x 1=6mks)

iii)- Gapping

- Thinning
- Control weeds by use of appropriate method
- Top dress using nitrogenous fertilizer
- Apply nitrogenous fertilizer at height of 40-60cm /knee high
- Apply 200kg of nitrogen per hectare
- Control stalk borer by use of appropriate pesticides
- Control disease by use of appropriate fungicides (6 x 1=6mks)