MANG'U HIGH SCHOOL
MOCK 2022
443/1
AGRICULTURE
PAPER 1
MARKING SCHEME

SECTION A

1.
- Shortage of farm labour.
- Increase cost of living of Aids patients and their relatives.
- Low food supply and poverty in general
- Resources that could be used in agriculture are used in treatment. (½ x 2=1mk)

2.
- Crop root depth
- Crop nutrient requirements
- Weed control
- Pest and disease control
- Soil fertility
- Soil structure (1½mks)

3.
- Size of the farm.
- Climatic conditions
- Security.
- Government policy
- Communication and transport facilities
- Available resources.
- Expected returns
- Farmer's objectives and performance. (½ x 4) = 2mks

4.
- They intercept the raindrops therefore reducing splash erosion
- They reduce the surface evaporation by providing shade.
- They reduce wind speed thereby minimizing wind erosion.
- The trees bind soil particles together.
- They slow down theerosive of forces water hence reducing erosion. (½ x 4 = 2mks)

5.
- Stage of plant growth.
- Plant morphology and Anatomy
- Herbicide characteristics.
- Environmental factors (1½mks)

6.
Carrying capacity – This is the ability of the forage stand to maintain a particular number of livestock units per unit area. (1x1=1mk)

Stocking rate   – This is the number of animals maintained per unit area of land.   (1x1=1mk)

7.
- It leads to forking
- It leads to bursting   (Any 1=1mk)

8.
- Formative pruning
- Pegging   (½ x2 = 1mk)

9.
- Increase shelf life of a commodity.
- Transforms commodities into utilizable forms.
- Reduces bulkness and therefore eases storage.
- Makes commodities easy to handle.
- Improves flavour of a commodity.   (½ x 2=1mk)

10.
- Agriculture supplies raw materials to the industries.
- Agriculture provides market for industrial goods.
- Agriculture provides capital which is used to start industries.   (½ x2=1mk)

11.
- Large animals
- Soil organisms and micro-organisms
- Human activities
- Plant roots.   (1½mks)

12.
- Fast growth
- Deep rooted
- Nitrogen fixing
- Good in by products.
- Have appropriate canopy (should not shade the other crops)
- Should be nutritious and palatable.
- Should not be allelopathic to crops   (1½mks)

13.
- Weather changes
- Theft of crops/livestock/machines
- Outbreak of pests and diseases
- Health of the farmer
- Accidents to employees/employer
- Fire
- Price fluctuation   (½ x 4=2mks)

14.
- Balance sheet
- Profit and loss account
- Cash analysis
-
-                                     (½ x 2=1mk)

15.
- Sulphur
- Magnesium
- Calcium   (½ x 4 = 2mks)

16.
- Shifting cultivation
- Buying several pieces of land scattered
- Farmer sub-dividing land to his heirs.
- Accumulation of land holdings by money lenders.
- Land offered to pay debts.   (½ x 3=1 ½ mks)

17.
- High moisture content which depresses DM intake
- Low total digestible nutrients
- Less laxative effects
- Bloat   (½ x 2=1mk)

18.
- Casual labour
- Fuel
- Feeds
- Drugs   (½ x 2=1mk)

19.
- Little amount water used.
- Water under low pressure can be used.
- Discourages fungal diseases such as blight
- Discourages the growth of weeds between the rows   (½ x 4=2mks)

20.
- Training
- Supervision
- Mechanization
- Giving incentives e.g. promotions and rewards
- Provide welfare services for workers e.g. medical, housing etc.   (½ x 2=1mk)
- Assigning specific duties

SECTION B

21. a) Tissue culture.   (1x = 1mk)

b)
- Use of culture medium with correct nutrients
- Use of growth regulators e.g. hormones.
- Introducing correct light intensity.
- Providing correct temperature and relative humidity.   (½ x 2 = 1 mk)

c)
- Can only be done under specific structures e.g. green houses and laboratories.
- Requires high level of sanitation.
- Requires high skills and careful handling.   (1 x 2 = 2 mks)

22. a) Trench silo   (1 x 1 = 1mk)
     b) Adding feed addictives.
     c) For easy compaction.   (1 x 1 = 1mk)

     d) Through seepage
        Evaporation   (1 x 2 = 2mks)

23. a) 18%N, 47% P_2O_5, 0% K_2O (1 x 1 = 1mk)

     b) Amount of CAN
    100% kg of CAN contain 20 kg N
       What about 20kg N.
       100 – 20N
       ? – 20

$$\frac{20x100}{20} = 100kgCAN$$

    Amount of Phosphorus
    100kg DSP – 10% Phosphorus

$$\frac{100x30}{10} = 300kgSSP$$

    Amount of Potassium required 10kg   (1 x 4 = 4mks)
    100 – 20
    ? – 10

$$\frac{10x100}{20} = 50kgMuriateofpotash$$

24. a) X   (½ x 1 = ½ mk)

   b)
Not too succulent/soft or too mature because when it is too succulent/soft it can rot faster or too much
mature, cannot rot easily.   (1 x 1 = 1mk)
   c)
  – For easy transplanting
  – Roof system is not disturbed during transplanting.
  – Can be carried over a long distance
  – Seeds can easily be stored before transplanting.   (½ x 4 = 2mks)
   d)
  – Temperature
  – Oxygen amount
  – Chemical treatment
  – Relative humidity
  – Leaf area
  – Light   max . 2 pb (½ x 2) = 1mk

e) Sett

<div align="center">

(½ x 1 = ½ mk)

SECTION C.

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25. a) i) <u>Ecological requirements</u>
   - Attitude range 0 – 2100 above sea level
   - Rainfall of atleast 750mm per annum
   - Temperature range of $24^0C – 29^0C$.
   - Soil pH of 6.5
   - Fertile soil with free drainage.   (1 x 3 = 3mks)

ii) **Land preparations**
   - Should be done during the dry season.
   - Clear the vegetation and remove stumps.
   - Carry out primary cultivation.
   - Harrow/carry out secondary cultivation.
   - Harrow the land to medium tilth.
   - Make furrows/holes at spacing of 90 – 100 x 50cm   (1 x 3 = 3mks)

iii) Crop establishment and management
   - Apply manure i.e. 7-10 tonnes of well rotten organic manure per hectare.
   - Use stem cutting or splits of selected varieties. Stem cuttings to have 2-3 nodes.
   - Plant the materials at the onset of rains.
   - Apply NPK fertilizer at the rate of 200kg/ha at planting time.
   - Plant the cuttings at a slanting manner and at appropriate depth.
   - Cover the furrows/holes adequately i.e. 2 nodes to be underground and a node above the soil surface.
   - Control weeds early by inter – row cultivation and uprooting.
   - Top dress using nitrogen fertilizers at the rate of 200kg/ha.
   - Defoliation is done from 6-8 weeks after planting depending on rainfall availability.(1 x 3 = 3mks)

iv) Utilisation
   - When ready, Napier grass is cut and fed to livestock. (i.e. when 3-5 months old)
   - Excess Napier grass is conserved as silage for future use.
   - Can be cut, dried and used as mulching material.   (1 x 2 =2mks)

b) i)
   - Makes maximum use of soil nutrients because of different nutrient requirements.
   - Reduces soil erosion because of good coverage.
   - Increases soil fertility, due to Nitrogen fixation.
   - There is better distribution of growth e.g. a mixture of early and late maturing varieties.
   - There is economical use of fertilizers in mixed pasture.
   - Has better weed control effect.
   - Yields are higher per unit area of land than pure grass alone.
   - It is more nutritious than pure grass i.e. more palatable.
   - Ensures security against total loss due to attack by pests, diseases, bad weather etc (hence a way of diversification)   (1 x 5 max. =5mks)

26. a)

Unit of labour input	Maize in kgs yield	Marginal product	Average product
		-	-
		600	600
		1200	900
		1200	1000
		600	900
		100	740
		-100	600
		200	500

b) i) Value of maize produced

Units of labour	Value of maize
0	0
1	600x20 = 12000
2	1800x20 = 36000
3	3000x20 = 60000
4	3600x20 = 72000
5	3700x20 = 74000
6	3600x20 = 72000
7	3400x20 = 6800

Mark as a whole if any unit is missing candidate loses the 2mks

ii) Cost of labour

Units of labour	Value of maize
0	0
1	200
2	400
3	600
4	800
5	1000
6	1200
7	1400

Mark as a whole if any unit is missing candidate loses the 2mks

c) – The level of 5 units of labour when the value of maize is Kshs.74000 against Kshs.1000 for labour.

27. a)
  – Growth habit of the crop
  – Type of machinery to be used.
  – Fertility of the soil
  – The size of the plant.
  – Moisture availability
  – Use of the crop

— Pests and disease control

b) i) Chitting
   − Ensures faster establishment
   − Ensure uniform germination
   − Maximum use of the rains

ii) Seed dressing
   - Seeds are dressed with appropriate chemicals to control soil borne pests and diseases.

iii) Seed inoculation – Application of appropriate Rhizobia on legume seeds to promote nitrogen fixation.

iv) Earthing up – heaping soil around the roof zone of the crop.
   − Preserve moisture
   − Support/prevent lodging
   − Easier harvesting of tuber crops
   − Easier of enlargement of tubers
   − Brings nutrients closer to the crop roots.
   − To control soil erosion.

v) Roguing – uprooting and destroying of infected crops.
- Helps in preventing further spread of diseases and pests to health crops

c)   -   Easy to carry out routine management practices.
               Easy to select health and vigorous growing seedlings
               Favours germination of tiny seeds
               Excess seedlings can be sold
               Enhances fasters maturity in the main seed bed.