

**2018**  
**443/1**  
**AGRICULTURE**  
**PAPER 1**  
**MARKING SCHEME**

- 1 -Ph determines the availability of crop nutrients  
-pH determines The rate of microbial activities in the soil  
-pH determines Type of crop to be grown in given areas ,  
-pH Influence attack of crops pest weed and diseases  
-pH influences the soil structure 2mrks
- 2 - Protein and amino acid formation  
- Formation of hormones of enzymes  
- Increase oil content  
- Enhance nodulation in legumes  
- Chlorophyll formation  
- Carbohydrates metabolism  
-Formation of some vitamins  $\frac{1}{2} \times 3 = 1\frac{1}{2}$  mrks

- 3--Stage of plant growth  
-Leaf angle  
-Leaf surface  
-Rooting system  
-Location of growing points  
-Concentration on herbicides  
-Weather conditions  $\frac{1}{2} \times 4 = 2$ mrks

- 4-Collecting produce from farmers/assembling  
-Transporting milk to factories and consumer  
-Processing milk  
-Storage of milk  
-Financing the marketing activities  
-Packaging of milk  
-Advertising  
-Conducting market research/ gathering market information  
-Grading and standardizations  $\frac{1}{2} \times 4 = 2$ mrks

- 5-early planting  
-Rogueing  
-Burning infected plants residues  
-Planting resistant varieties  
-Use of suitable insecticides  $\frac{1}{2} \times 4 = 2$ mrks

- 6 weather changes  
Theft

Outbreak of diseases  
Health of the farmer  
Accident to employees /employer  
Fire  
Price fluctuations  $\frac{1}{2} \times 4 = 2$ mrks

7 price of substitutes  
Price expectation in future  
Quality of the commodity  
Tastes and preferences of the commodity  $\frac{1}{2} \times 3 = 1 \frac{1}{2}$  mrks

8 to obtain high quality yields  
To obtain seed with high germination percentages  
To reduce chances of disease and pest attack  
To make it easy to identify seeds those are suitable to given ecological zone  $\frac{1}{2} \times 4 = 2$ mrks

9 poor soil fertility /excessive leaching  
Less rainfall /unreliable rainfall/excess/ rainfall  
Poor soil pH/inappropriate soil pH  
Pest and disease outbreak  
Poor weed control  
Too high /low temperature  
Extreme light intensity  
Inappropriate topography  $\frac{1}{2} \times 4 = 2$ mrks

10 gapping  
Thinning  $\frac{1}{2} \times 2 = 1$ mrks

11 staking  
Propping  
Trellising  $\frac{1}{2} \times 3 = 1 \frac{1}{2}$  mrks

12 to prevent loss of soil nutrients  
To preserve moisture  
To reduce siltation of water bodies  $\frac{1}{2} \times 2 = 1$ mrks

13 intercropping- is the growing of two or more crop on the same piece of land at the same time  
Mixed cropping is the growing of two or more crops on the same piece of land but on different portion at the same time 2mrks ( mark as a whole)

14 hilly land using big seeds  
Dry soil with /little moisture  
Presence of less trash  
Using big seed  $\frac{1}{2} \times 4 = 2$ mrks

15 Prevent germination /sprouting

Reduce fungal attack  
Reduce insect damage  
Prevent wet heating  $\frac{1}{2} \times 4 = 2\text{mrks}$

16 crop rotation  
Use of fungicides  
Use of certified seeds /clean planting materials  
Rogueing  $\frac{1}{2} \times 4 = 2\text{mrks}$

17 Compatible with scion  
Disease and pest tolerant  
Healthy and vigorously growing  
Able to adapt to different soil and soil condition  $\frac{1}{2} \times 4 = 2\text{mrks}$

18. a) K-----Maize stalks  
L-----Green vegetation  
M-----Well decomposed manure.  
N-----Dry leaves.  
 $\frac{1}{2} \times 4 = 2\text{mrks}$

b) Uses.  
K-----Forms the foundation of the heap.  
M-----Supply nutrients.  
N-----Forms final cover on heap.  
O-----Detect heap temperatures.  
 $\frac{1}{2} \times 4 = 2\text{mrks}$

c) Four reasons why compost manure is no popular.  
-Lack of technical knowledge.  
- Scarcity of organic materials.  
-Laborious / tedious to prepare.  
-Bulky to transport.  
- It take a long time to prepare.

$\frac{1}{2} \times 4 = 2\text{mrks}$

19 (a) N ----- squirrel.  $1 \times 1 = 1\text{mrks}$   
(b) - Use of rat deflectors in storage facilities (physical method)  
- Use of cats (biological method)  
- Use of rodent traps  
- Use of rodenticides.  $1 \times 1 = 1\text{mrk}$

(c) Unearth and eat sown seeds.  
Dig up and plant roots and tubers,  
Climb up maize stalks to eat grains.

$1 \times 1 = 1\text{mrk}$

20 (a) Side grafting Rej: Grafting alone  $1 \times 1 = 1\text{mrk}$

(b) K- Scion

L- Root stock  $\frac{1}{2} \times 2 = 1$ mrks

(c) (i)Facilitates the changing of the top of the tree from being undesirable

(ii) Repairs damaged trees

(iii) Shortens maturing age of tree

(iii) Make it possible to grow more than one type of fruit or flowers on the same plant

(iv)Helps to propagate clones that cannot be propagated in any other form

(v)Crop with desirable root characteristics but undesirable products can be used to produce desirable products  $1 \times 2 = 2$ mrks

21 a) - Variety Q (1mk)

b) Reason

- Seeds are exposed

- It is easier for birds to perch and feed on grain head (Any 1 x 1 = 1mk)

c) Reason

- To reduce fungal attack/rotting

- To reduce insect / pest attack

- To prevent germination/ sprouting during storage (2 x 1 = 2mks)

22. a) - To establish a convenient plucking table

- To encourage development of lateral branches. (2 x 1 = 1mks)

b) Disadvantages

- Its tedious practice as each branch must be pegged down

- Require many pegs which might turn out to be expensive.

- Its time consuming (any 2 x 1 = 2mks)

23 (b) s **Explain ten farming practices which help conserve soil on a farm (7mks)**

- Mulching to reduce the speed of run-off

- Controls farming by reducing the speed of run-off

- Terracing

- Afforestation/ reafforestation/tree planting

- Establishing and maintaining vegetated water ways to reduce speed of run-off.

- Cover cropping

- Minimum tillage

- Contour ploughing

- Strip cropping

- Crop rotation

- Manure ring/use of organic manures

**(Any 7 correctly explained**

**b) How to overcome risks and uncertainties**

**(7mks)**

(i) Diversification / growing a variety of crops / having various enterprises so that if one fails, the farmer has something to rely on.

(ii) Insurance against losses / having insurance policy for activities, so that In case failure the expenses are covered.

(iii)Inventory marketing, strategic farming, strategic farming, keeping farm products and selling at a stage when prices are favorable.

Iv Flexible enterprises, engaging in enterprises that can be stopped or started early as conditions

change.

V Rationing of inputs, using just sufficient inputs such that in case of losses the cost are not too high.

Vi Using more husbandry practices, using practices that the farmer is sure of and has used in the past.

Vii Hedging / contract marketing, making arrangements with marketing agencies in advance so that changes in prices after the arrangements do not change the price of farmers produce.

Vi Selecting more certain enterprises, selection of enterprises that have done well in the area / tried through research.

Ix Maintain liquidity, for use in case of any eventuality.

X Adopting modern methods of production, / modern technology, by adopting risk reducing techniques eg use of disease resistance varieties, irrigation.

**Method = 1/2 Explanation = 1/2 mrk = 7 x 1 = 7mrks -**

c) Explain the importance of Agro forestry trees (6mks)

- Source to firewood / food fuel
- Agro forestry trees or products can be sold to earn income.
- Trees protect soil from strong rains, sun and wind and consequently reduce soil erosion.
- Sales time wasted to look for firewood
- Makes farms beautiful
- Source of construction materials
- Marks farm boundaries
- Provide shade to crops and livestock
- Can be eaten as food
- Can be used as livestock feeds

**(Any 6 correctly explained =**

**6mks)**

24 a **Cultural methods of pest control.** (8mks)

-Timely planting- crops —crops escape pest ingestion while in the field e.g. maize escape the attack of stalk borer if planted early.

Tillage —proper tillage expose pest to be killed by hot sun or by predators.

Timely harvesting - some pests can attack crops while in the field (e.g. grain weevils)

Crop rotation —crops which are more susceptible to certain pests are rotated with crops that not attacked by the same pest.

Use of clean planting materials:

- used to avoid introduction of pests in the field /seedbed. Proper spacing.
- pest find it difficult to attack crops that are properly spaced e.g. aphids in groundnuts.

Quarantine.

- Government regulation is used to avoid introduction or spread if pests in an area or country
- It enables plants to grow faster and become strong to resist pest attack. Organic and inorganic manure's can be used.

Field hygiene

- It involves the removal and destruction of plants infested with pests from the seed bed.

Alteration of environmental conditions

- It involves creation of micro- climates that are less conducive to some pests.

Destruction of alternate hosts

- Removal of plants that harbor certain pests from seedbed.

Trap cropping:

- Establishing plants that attract particular pests so as to discourage them from attacking the main crop
- (Any 8 correctly explained.**

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24 b) Steps farmers to follow in planning farm business.( 7mks)

- (i) Determination of the size of the farm
- (ii) Determination of environmental conditions / collection of information on climate, soil, vegetation and analyzing the data in order to establish production possibilities.
- iii Determination of farmers objectives and preferences in order to eliminate those production possibilities that are unsuccessful.
- Iv Determination of all available resources to the farmer in order to establish his/her abilities and limitations.
- V Determination of possible productive enterprises.
- Vii Development of tentative budget / translation of physical plan into a financial one.
- Vii I Determination of yield of various enterprises.
- Ix Development of financial flow in order to establish capital requirements.
- X Examination of the plan to ensure that it is consistent, workable and desirable. Accept:- Analyzing, revising of plan.
- Xi Determination of government policies and regulations to make the plan realistic.
- Xii Determination of existing market conditions and price trends.

Any 7 x 1 = 8mk

24(c) Reasons for controlling weeds. (5mks)

- Avoid weeds which compete with crop nutrients, space, light and soil moisture.
  - Remove parasite weeds like the witch weed.
  - Improve the quality of produce which can be reduced by presence of weed seeds, and bad weed smells
  - Avoid farm poisoning by poisonous weeds like thorn apple.
  - To control some pests which can be hosted by some weeds.
  - To allow better crop germination by removing weeds that are allelopathic.
  - Open irrigation channels
  - improves the quality of pastures
  - Ease work by killing irritating weeds.

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**(Any 5 correctly explained**

25. a) - Training and education of members on improved farming techniques
- - Markets produce on behalf of farmers
- - Provide short and long term credit to farmers

- - Negotiates for fair prices ie input purchase and sale of farmers produce
- - Distributes farm inputs to the members
- - Keep records on all activities of the co-operative
- - Pay dividends to members
- - Provide banking services to members
- - Invests money on behalf of farmers
- - Storage of members produce before transmission to the market.
- - Collect and assemble members produce
- - Processing some produce after collection
- - Provides extension services and machinery hire services to the members

**Any 7 correctly explained**

25. b)
- - Clear bushes and uproot stumps
  - - Plough the land thoroughly
  - - Harrow the land to fine tilth
  - - Remove all perennial weeds
  - - Prepare the land early/ during dry season
  - - Firm the soil before and after planting using rullers
  - - Select a suitable grass variety for the area
  - - Plant at the onset of rain or before rain
  - - Apply phosphate fertilizer at planting at a rate of 200 – 300 kg /ha ssp
  - - Drill or broadcast seed evenly
  - - Use recommended seed rate i.e 5 – 10 kg of non PGS and 1 – 5 – 2 kg of PGS seed/ha
  - - Drag ganny bags / tree branches to cover the seeds.
  - - Control weeds by uprooting / apply selective herbicides
  - - Apply a nitrogenous fertilizer from 6 weeks after germination in split applications
  - - Practice light grazing in the initial stages of establishment
  - - Avoid grazing when the pasture is too young **(any 8 x 1 = 8mks) –**

25 (c) Suitability to ecological conditions – should be well adopted to the soil conditions, temp and amount of rainfall in the area.

Purity of the materials – should be free/ not mixed with off-types Low seedrates are used for pure seeds and higher seed rates are used for impure seeds

- Germination percentage Lower seed rates for crops with higher germination percentage while higher seed rates are used for those with lower germination percentage.

Certified seeds -Seeds which have been tested and prove to have 100% germination potential and free from diseases and pests **Any 5 correctly explained**

