**AGRICULTURE FORM 4 PAPER 1**

**Section A ( 30 MARKS)**

***Answer all questions in the questions in this section in space provided***

1. **State four qualities considered when selecting seeds for planting (2 Marks)**
* *Should be pure/ clean/ no impurities*
* *Should have high germination percentage*
* *Free from pest attack/ disease/ healthy*
* *Whole/ no physical damage*
* *Suitable to ecological condition*
* *Have high vigour*
* *Be uniform in size/ colour/ shape*
1. **State two classes of herbicides based on formulation (1 Mark)**
* *Liquids*
* *Welt able powder*
1. **State four practices which help in achieving minimum tollage (2 Marks)**
* *Establish cover crops*
* *Use of herbicides to control weeds*
* *Timely cultivation*
* *Mulching*
* *Cover cropping*
* *Uprooting/ slashing weeds*
1. **Give four reasons why most farmers do not use green manure (2 Marks)**
* *Most crops are sued as food*
* *Manure crops use most of soil moisture leaving little for the next crop*
* *Most nutrients are used by micro-organisms in the process of decomposing green manure*
* *It delays planting as it takes time for crop to decompose.*
1. **Give four policies that the government has instituted in order to regulate importation of agricultural goods. (2 Marks)**
* *Heavy taxation of imported agricultural goods*
* *Quality control*
* *Subsidizing the growing of locally*
* *Stepping up control of disease/ parasites that affect crops/ livestock*
1. **a) Give four methods of applying fertilizer to crops (2 Marks)**
* *broadcasting*
* *placement*
* *side dressing*
* *foliar spray*
* *drip*

**b) Give three examples of straight fertilizers (1 ½ Marks)**

* *nitrogenous fertilizer (accept valid example)*
* *pottasic fertilizers (accept correct example)*
* *phosphate fertilizer (accept correct example )*
1. **State four pieces of information contained in a land title deed (2 Marks)**
* *Land tittle number*
* *Size of land*
* *Name / identity of owner*
* *Seal number of registrar*
1. **State four characteristics of small scale farming (2 Marks)**
* *Small size pieces of land*
* *Simple tools used*
* *Produce for subsistence (surplus is sold)*
* *Low yied per unit*
1. **Suggest four ways that should be sought to get more land into agricultural production (2 Marks)**
* *Drainage*
* *Drainage*
* *tsetse fly control*
* *practice agroforestry*
* *afforestation*
* *planned deforestation*
1. **State four ways in which soil profile influence plant growth (2 Marks)**
* *Anchorage*
* *Drainage*
* *Water retation*
1. **Name two conditions that encourage damping off disease in nursery (2 Marks)**
* *Heavy watering*
* *Excessive shadding*
* *Overcrowding of seedlings*
1. **State four factors a farmer will consider when choosing a jembe for primary tillage (2 Marks)**
* *Small piece of land*
* *If only available tool*
* *Lack of skills for operating other implements*
* *Lack of capital*
* *Sleep slope where ploughs cannot be used*
1. **State four factors considered when classifying crop pest (2 Marks)**
* *Where pest are found*
* *Feeding habit/ mouth part/type of damage*
* *Crop attacked*
* *Scientific classification*
* *Stage of grow that which crop is attacked*
* *Stage of development at which it causes damage*
* *Part of plant attacked*

1. **A farmer owns one hectare on which he can grow maize whose yield is 15 bags/ha, but he has chosen to grow sorghum whose yield is 20bags/ha. If maize is sold KSH 1,200.00 per bag while sorghum is sold at Ksh. 700.00 per bag. Calculate the opportunity cost (2 Marks)**

*Revenue of best forgone alternative*

*15 bag x 1200/=*

*18000/=*

1. **Give three non-chemical factors affecting rooting of cuttings (1 ½ Mark)**
* *Oxygen supply*
* *Leaf area*
* *Chemical treatment*
* *Hormone concentration*
1. **List four features of plastic pipes a farmer should consider before buying a pipe (2 Marks)**
* *Durability of the pipe*
* *Size*
* *Colour*
* *Working pressure*

**SECTION B**

***Answer all questions in the space provided***

1. **The diagram below illustrates a final seed bed after a tertiary operation done during land preparation. Study it and answer questions that follow.**
2. **Name the tertiary operation carried out on the seed bed (1 Mark)**

*ridging*

1. **Give two factors that may necessitate establishment of structure (2 Marks)**
* *When growing tuber crops*
* *If land is water logged*
1. **Give two advantages of planting crops on the seedbed illustrated above (2 Marks)**
* *Enhance tuber/ root expansion*
* *Make harvesting easy*
* *Prevent soil erosion*
* *Conserve soil moisture*
1. **Study the following diagrams and answer questions that follow.**
2. **Identify weeds given above (1 ½ Marks)**

*a.Thorn apple/ datura straminium*

*b. nut grass*

*c. double thorn*

1. **State economic importance of weed A and B (2 Marks)**

**A –** *Poisonous to livestock*

**B –** *feed to livestock*

1. **State an example of herbicide for controlling weed A and B (1 Mark)**

*2-4 D*

*MC-PA*

1. **The diagram below illustrates a method of training carried out in growing some crops. Study it and answer questions that follow**
2. **Identify the method of training shown (1 Mark)**
* *Trelishing*
1. **Name two crops which the practice above can be carried out (1 Mark)**
* *Passion fruit*
* *Tomatoes*
* *Strawberry*
1. **Explain three reason for carrying out practice above (1 ½ Mark)**
* *Clean fruits*
* *Easy harvesting/ inspection/ weeding*
* *Economizes spray/ easy penetration of spray*
* *Control soil borne pest and diseases infestation*
1. **Give two other methods of training crops (1 Mark)**

*Propping*

*Pruning*

*staking*

1. **A farmer is advised to apply 30kg P3O5/ha. The available fertilizer is 20:15:10. Calculate the amount of fertilizer he will require for his three hectare piece of land (3 Marks)**

*If 100kg contains 15kg P2O5*

 *30kg P2O5*

$\frac{100kg ×30kgP2O5}{15kg P2O5}$ *=200kg fertilizer / ha*

1. **Give a reason for each of following practices**
* *Topping – stimulate fresh growth/regeneration*
* *Prolong productive life*
* *Top dressing - add nutrients*
* *Increase herbage yield*
* *Improve correct PH and soil structure*
* *Improve microbial activities*
* *Weeding – weeds interfere with forage fertilization*
* *Weeds reduce life span of pasture*
* *Competes with forage crops for nutrients*
* *Weeds reduce quality of herbage*
* *Weeds reduce herbage yield*

**SECTION C (40 MARKS)**

**Answer only two questions in this section**

1. **a) Explain six factors that contribute to competitive ability of weed (6 Marks)**
* *Ability to produce large quantities of viable seeds e.g pig weed*
* *Weed seeds remain viable in the soil for long time awaiting conducive germination conditions*
* *Most weed seeds are easily and successfully dispersed*
* *Ability to survive in soils with low nutrient supply have short lifecycles hence reaching maturity easily*
* *Some weeds have ability to propagate vegetatively.*
* *Some have elaborated/ extensive root system useful in supporting plant & absorption of nutrients.*

**b) Explain four maintenance practices done to a maize store before storage (4 Marks)**

* *Clean store thoroughly*
* *Repair/ replace broken parts to avoid loss of grains*
* *dust with appropriate chemicals to control storage pest clear vegetation around the store to keep of pests*

**c) Describe safety measure one should observe when handling herbicides (10 Marks)**

* *read manufacturers instructions and follow them*
* *wear protective clothing/ put on gloves, overall/face mask, boosts*
* *avoid inhaling herbicides/ not smoke while spraying/ not spray against wind/ wear breaking mask*
* *bath thoroughly after handling the herbicide/ not eat before bathing*
* *not blow/ suck blocked nozzles*
* *proper disposal of empty containers bottles*
* *keep away from reach of children*
* *avoid drift to pasture filed*
* *wash the equipment thoroughly*
* *not was equipment neat water bodies*
1. **a) Explain four properties of nitrogenous fertilizers that dictates this handling (8 Marks)**
* *Short residual – apply them frequently*
* *Burning/ scorching effect – should not come into contact with any part of plant especially the leaves*
* *Highly volatile – applied in moist soil*
* *Highly hygroscopic – should be stored under dry condition well covered containers*
* *Highly corrosive – should not be handled with bare hands*

**b) Outline six cultural activities that may be undertaken to control pests in beans (6 Marks)**

* *Timely planting – crops escape pest attack*
* *Timely harvesting – crop escape pest attack*
* *Proper tillage o exposes pest to predators/ scorch sun*
* *Trap cropping – attracts pests away from the main crop thus it easy to destroy the pest*
* *Crop rotation – starves pests to death*
* *Planting resistant – varieties*
* *Filed hygiene – keep field free from any plant material harboring pest*
* *Use of clean planting materials – prevent introduction/ spread of pest*
* *Destruction of alternative host such as weeds.*

**c) Describe reasons for raising kales in nursery before transplanting (6 Marks)**

* *It facilitates production of many seedlings in a small area.*
* *Routine management practices are easily and timely carried out in the nursery than in the main seed bed*
* *It makes it possible to provide the best conditions for growth such as fine tilth leveled field and shade*
* *It facilitates the planting of small seeds which develop into strong seedling that are easily transplanted*
* *It ensures transplanting of only those seedling that are healthy and vigorously growing excess seedlings from the nursery may be sold, thus become a source of income to the farmer*
1. **Rainfall amount ­–** *determines type of crops to be grown in an area*

**Rainfall reliability –** *determine time to prepare and plant crops.*

**Rainfall distribution –** *determines choice of crop varieties**to plant*

**Rainfall intensity –** *high rainfall intensity cause erosion, low rainfall may not provide enough moisture for crops.*

**b) Structural methods of conserving soil and water**

* *Buds – heaps of soil along contour- trap eroded soil/slow down speed of water*
* *Cut off drains/diversion ditches- open trench with walks on lower side- collect and divert water into rivers, valley or water way*
* *Terraces – constructed to reduce surface flow/carry away water which cannot be absorbed by soil*
* *Gabions / porous dams – are boxes of wire mesh filled with stones build across gullies to trap eroded soil/ slow down speed of run off.*
* *Dams - Barriers built across river to hold and store water/ reduce speed of water*

**c) Methods used in preparing materials for planting (8 Marks)**

* *Breaking seed dormancy to hasten germination is done by ; (accept any valid method)*
* *Seed dressing – coating seeds with fungicides or insecticide/ chemicals to control soil borne pest & disease*
* *Seed inoculation – coating legume seeds with right rhizobium strain to increase nodulation/ nitrogen fixation*
* *Sprouting – is breaking dormancy in Irish potatoes where selected potato sets are sprouted before planting.*