**AGRICULTURE PAPER ONE (443/1)**

**MARKING SCHEME**

**SECTION A**

1. Four disadvantages of extensive farming
* Law output
* Land is underutilized
* Done where land is not limited
* Can not use land to get loans
* Low profit per unit area
* Poor quality produce
* No land improvement
* High spread of pests and diseases (4×½=2mks)
1. Four human factors that lead to low crop production
* Low level of education
* Poor health
* Poor economy
* Lack of market force
* Poor government policy
* Cultural and religious belief (4×½= 2mks)
1. Four characteristics of soil that influence crops planted
* Nutrients available
* Soil PH
* Drainage
* Water holding capacity
* Air movement
* Soil depth (4×½= 2mks)
1. Four factors that influence the number of secondary cultivation
* Size of planting material
* Land topography
* Soil moisture
* Condition of soil ciods
* Capital available
* Population of weeds (4×½= 2mks)
1. Four reasons for ridging
* Encourage tuber expansion
* Control soil erosion
* Improve drainage
* For easy harvesting tuber crops (4×½= 2mks)
1. Four practices that encourage minimum tillage
* Use of herbicides
* Mulching
* Cover cropping
* Slashing/ uprooting/ grazing animals on weeds (4×½= 2mks)
1. (a) Three non chemical methods of water treatment
* Filtration
* Boiling
* Sedimentation
* Geration (3×½= 1½mks)

 (b) Four advantages of trickle irrigation

* Require little water
* Use water under low pressure
* Discourage fungal diseases
* Control weeds between rows
* Can be used to apply soluble fertilizer (4×½= 2mks)
1. Four importance of organic matter in sandy soil
* Increase water holding capacity
* Improve soil fertility after decomposition
* Provide food and shelter to micro-organisms when fresh
* Improve soil structure after decomposition
* Butter soil pits after decomposition
* Reduce the toxicity of plant poison due to chemical and fertilizer application after decomposition
* Pack color of humus increase soil temperature that make crops grow faster (4×½= 2mks)
1. Four types of records kept by a poultry farmer
* Egg production
* Inventory
* Feeding
* Health
* Marketing
* Labour (4×½= 2mks)
1. (a) Two forms nitrogen element is absorbed by plants
* Nitrate ions (NO¯3)
* Ammonium ions (NH+4 ) (2×½= 1mk)

 (b) Two methods of harvesting Agro forestry trees

* Pruning
* Lopping
* Pollarding
* Coppicing
1. (a) Four importance of nursery practice
* Production of many seedlings in a small area
* Easy to carry management practices
* Easy to provide the best condition for growing of crops
* Facilitating the planting of small seeds into strong seedlings
* Easy to select healthy seedlings for transplanting
* Facilitating planting of already established seedlings
* Excess seedlings can be sold (4×½= 2mks)

 (b) Three vegetative propagation material of pineapples

* Crown
* Slip
* Suckers (3×½= 1½mks)
1. Four effects of excessive application of nitrogen fertilizer on growing maize
* Lodging / excessive / succulence weakening of stems
* Scorching / burning of leaves
* Delayed maturity
* Excessive foliage growth
* Encourage/ causes blossom end rot (4×½= 2mks)
1. Four cultural ways of controlling nematodes in a field of bananas
* Plant resistant / tourant varieties
* Remove and burn infected plants / held hygiene
* Crop rotation
* Plant Mexican marigold in the field
* Trim roots of suckers before planting (4×½= 2mks)
1. Pricking out and Rogueing
* Pricking out is uprooting some seedlings in an overcrowded nursery and planting them in a second nursery bed while rogueing is uprooting and destroying infected plants with a disease (mark as a whole 1mk)

**SECTION B**

1. (a) Soil porosity / water holding capacity (1mk)

(b) The smaller the size of the particles the greater the force of holding capacity (1mk)

(c) Sample L

(d) J – Sandy soil

 L- Clay soil

1. (a) C

(b) A- Too close to the bud

 B- Sloping wrong way

 D- Too far from the bud

(c) 3 importance of pruning coffee

* Remove diseased and unwanted parts
* Cropping
* Facilitate picking
* Easy penetration of chemical spray
* Remove micro-climate for disease coming microorganisms e. g CBD (3mks)
1. (a) Smut (1mk)

(b) Any cercal crop and sugarcane (2mks)

(c) Two control measure

* Hot water treatment
* Use certified seeds
* Crop rotation Field hygiene (2mks)
1. (a) Zone 1: An input of fertilizer results in an increased output in bean production

 Zone 2: Any increase in input results in a decreased output of beans till it reaches a maximum I e decreased output reaches zero

Zone 3: Any further increase in fertilizer input results in a negative output of beans I e decline (3mks)

(b) Zone 2 because the output reaches maximum (2mks)

**SECTION C (40MKS)**

1. (a) Intenerant traders / middumen: buy produce from farmers and resell
* Processors or manufacturing companies: Buy produce to process
* Wholesalers: Buy produce in bulky from farmers or processors and resell
* Brokers or commission agents: Act on behalf of other businessmen for a fee or commission
* Co-operative societies and union: Buy farmers produce locally
* Marketing boards: Buy produce from farmers (state 1mk, explanation 1mk)

(b) Six practices that control maize diseases

* Crop rotation: Break life cycle of disease causing organisms
* Rogueing: Prevent spreading
* Plant disease free plants: Prevent introduction of pathogens
* Close seasons: Break life cycle of pathogens
* Early planting / timely: Crops establish faster before attack
* Weed control: Prevent them harboring some pathogens
* Use resistant varieties: Prevent attack by pathogens
* Chemical application: Kill pathogens
* Clean equipments: Reduce contamination with disease causing organisms
* Quarantine: Prevent introduction of pathogen on farm
* Destroy crop residues: Minimize spread
* Control vectors: Minimize spread of pathogens
* Proper plant nutrition: Make plant resistance to disease attack and deficiency diseases
* Proper spacing: Create unfavorable micro-climate for some pathogens

 (state ½mk; explain ½mk)

 (c) Importance of irrigation

* Enables crop production during dry seasons
* Enable to reclaim and land for production
* Supplement rainfall for crop production
* Sustain proper growth of crops which require plenty of water e g rice
* Create favorable temperature for proper plant growth
* Facilitate supply of fertilizer in irrigation water / fertilization
* Make possible to grow crops in special structure I e green houses
* Increase crop yield
* Maximize utilization of resources where land is ferble but no water
* Source of employment in areas where it is used extensively
* Promote crop production for export
* Control pests like moles and aphids
1. (a) Five farming activities which may encourage soil erosion
* Continuous cropping
* Burning of vegetation
* Ploughing along the slope
* Deforestation
* Ploughing along the river banks
* Cultivating when soil is too dry
* Overgrazing / overstocking
* Flooding / over irrigation
* Over cultivation / pulverizing the soil (5mks)

 (b) i) Procedure of harvesting cotton

* Start 4 month after planting
* Have two containers
* Done when balls are dry
* Pick as soon as first ball open
* Sorting is done as you harvest grade AR (Safi) and BR (fifi)
* Avoid contamination / avoid sisal bags (5mks)

 ii) Precautions during harvesting sugarcane

* Bunt cane should be cut immediately after burning
* Cut cane be delivered to factory within the first 24 hours
* Cut cane at ground level (3mks)

 (c) Describe the production of carrots under the following sub-headings

 i) Seedbed preparation

* Prepare during dry season
* Clear vegetation
* Plough / dig deeply to eradicate all seeds
* Harrow to a moderate filth / fine / appropriate filth

 ii) Field management

* Thinning
* Weed control
* Top dressing
* Spray appropriate pesticides to control pests
* Spray appropriate fungicide to control diseases
* Water during dry seasons (4mks)
1. (a) Seven factors that influence seed rate
* Intended use of the crop: Fodder more seeds
* Germination percentage: How germination more seeds
* Method of planting: Broadcasting more seeds
* Number of seeds per hole: Two or more require more seeds
* Soil fertility: Fertile soil more seeds
* Size of crop: Tall spreading crops less seeds
* Spacing: Close spacing more seeds
* Seed purity: Impure seeds more seeds
* Crop stand: Pure stand more seeds (state & explanation 7mks)

(b) Five factors necessary for proper functioning of farmers co-operative societies

* Availability of adequate funds, capital invue for members
* Training of personnel or availability of advisory services on managerial skills
* Loyalty on the part of all farmers co-operators and officials to support their organization
* Proper and accurate record keeping and accountability for all operations
* Efficiency with which produce from farms are marketed
* Honesty on the part of personnel with regard to the handling of cooperative finances
* Timely payment of farmers dues (5mks)

(c) Eight ways farmers can overcome risks and uncertainties

* Diversification / growing a variety of crops or having various enterprises: If one fails he can rely on the other
* Taking insurance policy: Incase of failure the enterprises are covered
* Inventory marketing / strategizing farming: keeping farm products and selling at time when prices are favorable
* Flexible enterprises: Engaging in enterprises that can be stopped or started early as conditions change
* Rationing of inputs: Using just sufficient inputs such that in case of losses the costs are too high
* Using more certain husbandry practices: Use practices that the farmer is sure of and has used in the past
* Contracting: Making arrangement with marketing agencies in advance that change in prices after the arrangement do not change the price of farmers produce
* Selecting more certain enterprises: Select enterprises that have done well in the area / tried through research
* Adopting modern methods of production: I e irrigation, planting resistant varieties (8mks)