**443/1**

**AGRICULTURE FORM 4**

**marking scheme**

**END OF TERM 2 EXAMINATIONS**

**Section A (30MKS)**

1. a. Removal of extra banana suckers stool

* Banana of stool management (½ mk)

b. removal of old stems pyrethrum

* Cutting back pyrethrum

 (½ mk)

c. Removal of suckers in coffee

* De-suckering in coffee
* Accept pruning (½ mk)

2. Three properties of phosphate fertilizers

* Sparingly soluble in water
* Have a residual effect in the soil
* Not liable to leaching
* Have a slight scorching effect (3 x 1/2 =1 1/2mks)

3. Two physical properties of soil on crops

* Soil texture
* Soil profile/depth
* Soil structure (2 x 1/2 = 1mk)

4. four ways of classifying crop pests

* Mode of feeding
* Crops attached
* Stage of development of the pest
* Stage of growth of crop
* Scientific classification
* Level of damage
* Habitat of where there are found (4 x 1/2 = 2mks)

5 a. Three uses of labor records

* Help in payment of wages
* Used in calculations of operation costs
* Use in assessment of income tax.
* Used in calculating profits or losses (3 x 1/2 = 11/2mk)

 b. Four advantages of overhead irrigation

* Water is evenly distributed over the required area
* Less wastage of water than furrow irrigation
* Can be practiced on sloppy grounds
* Foliar fertilizers can be applied with irrigation water. (4x 1/2 = 2mks)

7. Basic economic concepts

* Scarcity
* Preference and choice
* Opportunity cost (3 x 1/2 = 11/2mk)

8. Four varieties for processing tomatoes

* Primabel
* San merzanno
* Cal J
* Kenya beauty
* Slein Z
* Rutjer S
* 10 x hybrid (4 x 1/2 = 2mk)

9. Four pasture management to enhance yields

* Weed control
* Top dressing
* Topping re-seeding
* Pest control
* Controlled grazing
* Irrigation (4 x 1/2 = 2mks)

10. a. Fertilizer elements

* Nitrogen
* Phosphorus
* Potassium (2 x 1/2 = 1mk)

b. liming elements

* Calcium
* Sulphur
* Magnesium (2 x 1/2 = 1mk)

11. Three ways in which pruning control diseases

* Enhance penetrating of spray to kill vectors
* Remove infected branches
* Remove micro-climate that to discovering pest and diseases
* Maintains field hygiene to reduce infections (3 x 1/2 = 11/2mks)

14. Four ways of weeds adaptation to the environment

* Elaborate /extension root system
* Ability to survive in poor soils
* Have short life cycle
* Some propagate vegetatively e.g. wandering jew
* Prolonged seed dormancy
* Wide range of ecological condition (4 x 1/2 =2mks)

13. Four factors that determine time of planting

* Rainfall patterns/water availability
* Growth habit of the crop
* Purpose of the crop
* Prevalence of pests and diseases
* Market demand (4 x 1/2 = 2mk)

14. Four factors that affect effectiveness of a pesticide

* Concentration of pesticide
* Weather conditions
* Persistence of pesticides
* Formulation
* Mode of action (4 x 1/2 = 2mks)

15. Reasons for staking in tomatoes

* Production of clean fruits
* Prevent infestation by soil borne diseases
* Facilitate spraying and harvesting of the crop
* Controls incidence of disease outbreaks e.g. light (4 x 1/2 = 2mks)

16. Cultural methods of soil and water conservation

* Mulching
* Cover cropping strips/filter strips
* Grassed water ways
* Planting agroforestry trees
* Contour farming (3 x 1/2 = 11/2mks)

17. Four benefits of land tittle deed

* Can be used as security to get a loan/credit
* Minimize land disputes
* A farmer can sell part or whole land (3 x 1/2 = 1/2mks)

**Section B (20 mks)**

18. a. i. by planting grass/suitable vegetation (1 x 1 = 1mk)

 ii. A – channel/trench (1 x 1 = 1mk)

 b. Measure √ and mark √ the layout of the drain

Dig and remove √ soil from the channel and heap it on the lower √ side of the drain

 (4 x 1/2 = 2mks)

19. i. X = loam

 Y = sand

 X = clay (3 x 1/2 = 11/2 mks)

 ii. Soils y (sand ) (½ mk)

 iii. It has drained the highest amount of water as opposed to others. (1 x 1 = 1mk)

 iv. soil Z/clay soil (1 x 1 = 1mk)

 v. it is not easily drained/ does not loose water easily when flooded (1 x 1 = 1mk)

20. i. Mallow weed (1 x 1 = 1mk)

 ii. Poisonous/toxic to livestock (1 x 1 = 1mk)

 iii.- uprooting (1 x 1 = 1mk)

* use of appropriate herbicides rej chemicals

 rej legislative (2 x 1/2 = 1mk)

21 a. F – Granular structure (½ mk)

 G – Platy structure (½ mk)

 b X – Humus with clay (½ mk)

 Y – air space (½ mk)

 c. - it prevents drainage/water infiltration (2 x 1 = 2mks)

 - prevent root penetration

 - Influences soil aeration

22. a. D – single stem pruning (1 x = 1mk)

b. the main stem is capped at 38 cm above the ground to encourage more suckers to grow

* Select two strong and healthy suckers and remove the others
* The selected suckers should form a U-shape to avoid splitting (2 x 1 = 2mk)

 **Section C**

23. a. factors affecting rooting of cuttings

* Temperature, warm temperatures are required for rooting
* Relative humidity, high humidity is required for proper rooting of cuttings
* Light intensity, hardwood cutting root well in dark while soft wood cuttings root well in high light intensity
* Leaf area hard wood cuttings root well without leaves while soft wood require leaves to root
* Chemical treatment – use of rooting hormones promotes rooting of cuttings (5 x 1 = 5mks)

 b. Factors influencing spacing

* Growth habit of the crop, spreading or tillering crops require wider spacing that that do not
* Purpose of the crop /intended use maize for silage is planted at a closer spacing than those for grain production
* Type of machinery to use for field practices
* Spacing adopted should allow free passage of machines for yield operations like weeding,
* Number of seeds per hole where more than one seed per hole is to be planted, wider spacing is used.
* Soil fertility, a fertile soil allows closer spacing compared to poor soils
* Moisture content of the soil /amount of rainfall in an area - High moisture content/rainfall may allow closer spacing but low rainfall necessities wider spacing
* Pest and diseases control; properly spaced crops make it difficult for pests to move from one crop to the other.

 Stating 1 mk each 5x 1 = 5mks

 Explanation 1 mk each 5 x 1 = 5mks total 10mks.

c. Ways in which government policy influences agriculture

* Provides subsidy on farm input to reduce cost of production done by reducing tax on inputs to make them cheaper
* Heavy taxation of imported goods to make them more expensive than local goods thus protecting local goods from adverse competition
* Quality control by setting up laws to ensure production of high quality goods which can compete locally and internationally
* Conservation of natural resources to make them sustain agriculture
* Stepping up control measures of diseases, parasite and pests. (5 x 1 = 5mks)

24. a. Cultural methods of pest’s control

* Crop rotation; a crop attacked by a certain pest is alternated with crop that is not attacked by starving the pest to death.
* Timely planting make plants to escape attack by pest.
* Proper tillage proper cultivation exposes pests to be scorched by the sun to death or to the eaten by predators
* Good field hygiene’s; involves keeping the field free from plant materials that harbor pest
* Use of clean planting material prevents introduction and spreading of pests
* Close season; a certain crop is not grown in order to break the life cycle of pest
* Use of certified seeds; these seeds are free from pests thus reduce introduction and spread of pests.
* Use of pest resistant in varieties e.g. goose – necked variety of sorghum is resistant to attack by birds
* Use of trap crop, trap crop attracts pests from the main crop and is then uprooted and destroyed
* Destroy alternative hosts, weeds that harbor pests are removed and destroyed and this starves the pests to death
* Proper spacing makes it difficult for pests to move from crop to the other,
* Pruning creates unsuitable habit for pests any (any 8 x 1= (8mks)

b. Procedure for silage making

* Prepare silo before harvesting the crops
* Harvest the crop at appropriate size of storage
* Wilt the crop for 6-12 hours
* Fill the silo with crop compacting every 10-12 layer
* Check the temperature regularly to ensure correct ensling temperature
* Cover the ensiled material with polythene paper
* Cover the silo with thick layer of the soil to maintain a ridge/hump to prevent rain water from entering the silo.
* Dig a trench around the silo to drain water away (7 x 1 = 7mks)

c. Observable indicates of economic development of a ration

* Development of better infrastructure
* Better housing for citizens
* Better and more recreation/facilities
* High teacher more student ratio
* Improved level of technology
* Less number of persons per doctor
* High number of people owning radios, tvs and motor vehicles
* High employment rates
* Amount of food per capita available (5 x 1 = 5mks)

25..a advantages of adding against manure into the soil

* Improves soil fertility when it decays too release nutrients
* Encourages microbial activities in the soil
* Improves water infiltration and retention capacity
* Improves soil drainage and aeration
* Reduces toxicity of the soil
* Prevents toxicity of nutrients
* Moderates /buffers the soil pit by preventing rapid chemical changes
* Regulates the soil temperature (Any 5 x1 = 5mks)

b. precaution taken when harvesting tea.

* Leaves should not be compressed in the baskets as it would cause heating up and lowering of availability
* Plucked tea must be kept cool and shaded
* Plucked tea should be taken to the factory for processing the same day it is harvested
* Plucked tea leaves should be pit in woven baskets for ventilation
* Discard dormant tea shoots/central leaves which are not opened as they are hard due to unfavorable conditions (Any 3 x 1 = 3mks)

c. Mr. Mulongo’s farm balance sheet as at 31.12.2020

|  |  |  |  |
| --- | --- | --- | --- |
| Liabilities  | Assets  | Amount  |  |
| Short term liabilities  | Amount  | **Current assets** Cattle feeds in store Animal drugs in store Debts receivableCash at hand Cash in bank **Subtotal**  | Shs | Cts  |
| Shs. | Cts. |
| Debts payable to coo-p secBonus payable to workers Breakages to repair **Sub-total**  | 20,00019,00030,00069,000 | 00000000 | 10,0004,00018,00020,00030,00082,000 | 000000000000 |
| **Long term liabilities**  |  |  |
| **Fixed assets**  |  |  |
| Loan payable to bank  | 300,000 | 00 | Building and structures  | 600,000 | 00 |
| 00 | 5 milking cows  | 25,000 | 00 |
| Subtotal | 300,000 | 00 | 400 layers  | 80,000 | 00 |
| 20 goats  | 30,000 | 00 |
| Spray equipment  | 12,000 | 00 |
|  **Subtotal**  | **972,000** | 00 |
| Total liabilities | 369,000 | 00 | Total assets  | **1,054,000** | 00 |
| Net worth | 685,000 | 00 |  |  |  |
| **Total**  | **1,054,000** |  | **Total**  | **1,054,000** | 00 |

 (6mks)

ii. Mr. Mulong’s business was solvent. (1mk)

d. post-harvest practices carried out maize

* Shelling to remove grains from the cobs
* Drying to the correct moisture content
* Cleaning – to remove foreign materials from the yield
* Dusting – applying insecticides to prevent attack by storage pests
* Starting and grading according to the quality
* Processing e.g. milking into flour
* Packing - e.g. into 90kg bags for sale (Any 5 x1 = 5mks)