**LANJET JOINT EXAMINATION 2024**

***Kenya Certificate of Secondary Education***

**443/1 Paper 1 MARKING SCHEME**

**AGRICULTURE**

**FORM 4**

**Instructions: Answer all Question in A and B**

1. Explain the following terms as used in Agriculture
2. Agricultural economics. ( ½ mk)

**This is minimizing the scare resource to realizes maximize profit realization**

1. Agricultural Engineering. ( ½ mk)

**Is branch of agriculture that deals withj operation of machines and maintenance and also building/construction of farm structure.**

1. State two methods that can be used to detect mineral deficiency in crops. (1mk)

Soil sampling /sampling

Use of PH meter

1. State two conditions under which shifting cultivation is favorable . (1mk)

**Where land is owned communally**

**Where land is abundant**

1. State two conditions under which seeds are seeded at high rate. (2mks)

**Where seed used is not pure**

**Where germination percentage is low**

1. How do trees help in maintaining soil fertility. (2mk)

**It help in compacting the soil, reducing soil erosion**

**The leaves decomposes to increase soil fertility**

**Act as wind breakers that help in controlling** **soil erosion**

1. Explain the meaning of opportunity cost. (1mk)

**Opportunity cost Is the value of forgone good/alternative**

1. Outline condition at which opportunity cost is zero. (2mks)

**where goods are given for free**

**where there is no alternative**

**where good are scarce**

1. Give three causes of hard pan in soil. (2mks)

**Caused by cultivating at the same depth for long time.**

**Working on wet soil.**

**Using heavy machines after onset of rain.**

2. Explain the meaning of additives as used in animal feeds. (1mk)

**There are feed component added to feed to increase the palability of feed in animals.**

1. What are the role of additive in making silage. (2mks)

**Make feed more palatable**

**Increases the appetite in animals**

1. Give four advantages of diversification in farming as a method of farming.(2mks)

**Mixed farming help in utilization of small piece of land.**

**The farmer benefits from another enterprise if one fails.**

**There is mutual benefit among the two existing enterprise.**

1. Give reasons why Agriculture is regarded as Science. (2mks)

**Agriculture involve study of intomology**

**Breeding techniques/genetics**

**Farm machinery operations**

**Soil analysis**

**Control of pest and diseases.**

1. Differentiate between Extensive farming system and intensive farming system.(2mks)

**Extensive farming –this is a system whereby large tracts of lands are used with low investment while intensive farming is a system is system of farming that involve use of small pieces of land with high capital investment.**

1. Why should top dressing be done on pasture. (2mks)

**To increase the rate of regeneration of pasture**

**To increase the palatability of pasture**

1. Give reasons for innoculating legume seeds before planting. (1mk)

**Inoculation of seed made it to have nitrogen and also prevent attack from soil-borne diaseases**.

2. Outline the classification of pasture. (1mk)

**Pure stand pasture**

**Mixed stand pasture**

1. Name four practices carried out to improve and maintain permanent pasture . (2mks)

**Top dressing**

**Weeding**

**Removal of foreign crops**

1. Name four advantages of tissue culture procedure in plant species. (2mks)

**Give rise to pure crop free-from diseases**

**Increase the rate of maturity to crop**

**Facilitate production of many plantlets**

**Good characteristics can be develop from single plant**

1. Outline four mechanical method used in control of weeds. (2mks)

**Mechanical weeding**

**Hand uprooting of weeds**

**Slashing**

**Digging weeds out**

**SECTION B**

1. The diagram below shows a set of apparatus for finding the % of humus in the soil by heating.
2. Label the apparatus. (2mks)
3. **Desiccator**
4. **Burnt soil**
5. **Wire gauze**
6. **Tripod stand**
7. **Bunsen burner**
8. Explain the steps followed in carrying out the illustrated experiment. (3mks)

**Obtain fresh soil in the farm**

**Weigh the soil**

**Burn the soil**

**Record the weight after burning**

1. Explain why it is difficult to control weeds that have rhizoid roots. (1mk)

**The rhizoid root can remain viable even long period of dry conditions awaiting the start of rains.**

1. Outline the practices that are used to train weak stem plants. (3mks)

**Staking**

**Propping**

**Threlishing**

1. Study the diagram below then annwer the question that follows.
2. Identify the method of drainage above. (1mk)

**Cambered bed drainage system**

1. State other method used in draining a swampy area. (3mks)

**French drain**

**Use of pipe**

**Planting of certain tree types**

1. Study the process of chemical water treatment below and answer the question
2. Identify the labeled parts A **Intake tank** (½ mk)

B **coagulation tank** ( ½ mk)

C **sedimentation tank** ( ½ mk)

D **Control tap**  ( ½ mk)

1. Mention two substances added at B and give the function. (2mks)

**Alum and its function is to enable sedimentation of dirts**

1. Give three uses of water in crop production. (3mks)

**Hydration of plant cells**

**Turgidity in plant**

**Act as a medium of metablic reaction in plant**

1. Outline two source of water. (2mks)

**Rain water source**

**Sub surface sources(borehole)**

**Surface sources(dam,rivers lake etc)**

**SECTION C(Select only two question)**

1. Explain what is planting. ( ½ mk)

**Planting is placing the seed into the soil for the purpose of germinating and growing into a new plant.**

1. Outline the materials used in planting. (3mks)

**Seeds**

**Vegetative materials**

**Stem cutting**

**Tubers**

1. Explain five factors that affects rooting of cutting. (10mks)

**Temperature ×2**

**Relative humidity×2**

**Light intensity×2**

**Oxygen supply×2**

**Chemical treatment×2**

**Leaf area.Explain×2**

1. Outline and explain factor that must be considered when selecting planting materials. (10mks)

**Suitability to the ecological conditions**

**Purity of the planting material germination percentage**

**Certified seeds×2 For any explanation**

2. Explain what is meant by the term seed dorminancy. (2mks)

**Seed dormancy is period in which seed cannot germinate even if all the required conditions are made available.**

1. Outline four methods of breaking seed dorminancy and explain them briefly. (8mks)

**Heat treatment method**

**Mechanical treatment method**

**Chemical treatment method**

**Soaking water**

**Scarification method explanations ×2**

1. Explain five factors that should be considered in choosing seed rate. (10mks)

**The amount of nutrients in the soil**

**The germination percentage of seed**

**The purity of the seed**

2. Discuss production of guatemala (trypsacum laxum) under the following sub-topics.
3. Ecological requirement. (2mks)

**Guatemela requires high altitude areas but affected by extreme cold.**

**Ecology of altitude above 2000m above sea level/**

**Rainfall 900mm/year and should be well distributes**

1. Establishment and management. (6mks)

**Preparation of land should be done early enough before on set of rains**

**Harrow the land to get medium tilth**

**Remove all perennial weeds**

**Planting stem cutting are used /splits seeds can also be used to establish**

**Plant them ½ meter apart within the row. planting should be done during inset of rains.**

**Apply fertilizer during plantation NPK 20:20:0 150kg/ha**

**Top dressing should be done using nitrogen**

**Weeding should be done to keep the land weed free**

1. Harvesting. (2mks)

**The grass should be harvested early enough when the quality is still good.**

1. Discuss methods of sowing in pasture. (10mks)

**Direct sowing**

**Undersowing**

**Oversowing.Explanantion×2**