

SUKELLEMO PREMOCK EXAM

443/1

AGRICULTURE

PAPER 1 MARKING SCHEME

JUNE 2022

1. State four factors that one consider when selecting planting materials (2mks)

- Suitability of planting materials

Purity of materials

Germination percentage

Certified seeds

2 marks

2. Define agroforestry. (1/2)

a) This involves growing of trees, crops and keeping of animals on the same piece of land

b) name **five** sites for agroforestry trees. (2 1/2mks)

Farm boundaries.

Homestead.

Terraces.

Rivers/water catchment areas.

Steep slopes.

Within pasture land/between crop plot.

3. State two crop production practices carried after planting to achieve optimum plant population. (1mk)

- Thinning

- Gapping

4. At what stage in the growth of beans should mechanical /weed control be avoided. (1mk)

- At flowering stage

5. Name one vegetative material used to propagate each of the following crops. (2mks)

i. Irish potatoes

- stem tubers.

ii. Pineapples

- crowns

iii. Bananas

- suckers

iv. Pyrethrum

- splits

6. Explain how temperature leads to formation of soil. (1mk)

Differential temperatures causes rocks to break into smaller fragments.

High temperatures increases the rate of chemical reactions in rocks hence increases rate of soil formation

7. State four financial books that should be kept on a farm. (2mks)

Ledger book

journal

cash book

Inventory

8. Give two reasons for drying grain crops before storage. (1mk)

Prevent rotting and fungal infection

Prevent aflatoxin

9. Give two sources through which a farmer can get capital to start an enterprise. (1mk)

Savings

Credit

grants

10. Explain how monocropping leads to a loss of soil fertility. (1mk)

Leads to exhaustion of some particular nutrients leading to their deficiency in the following years.

11. What is opportunity cost? (1mk)

Is the value/return from the second best foregone alternative.

12. Outline two conditions that favour nomadic pastoralism in Kenya. (1 mark)

- i. Where there is space/low population.
- ii. Where land is communally owned.
- iii. Where the number of livestock per unit area is low.
- iv. Where land is abundant.

13. State four reasons why it is important to keep livestock health records. (2mks)

- i. Information is used during selection and culling of animals on health grounds.
- ii. Show course of action to be taken in maintenance of health/control of livestock diseases.
- iii. Used during calculation of cost of treatment.

14. Give four advantages of mixed pasture. (2mks)

- i. High quality produce.
- ii. High yields/production.
- iii. Eases control of weeds.
- iv. Aids in soil and water conservation.
- v. Eases control of pests and diseases.

15. Give two ways by which losses are incurred in silage (1mk)

Surface spoilage,

seepage losses

Gaseous losses

16. List two methods used to drain farm land (1mk)

Open ditches,

underground drain pipes ,

French drains,

cambered beds,

pumping ,

planting trees

17. Give two varieties of carrots (1mk)

Fresh market –chantenary and nantes

Canning variety nantes

Livestock feed variety -- oxford

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18. State two roles of water in plants. (1 mark) .

Roles of water in plants.

- Solvent for nutrients.
- Facilitates cooling in plants.
- Essential raw materials in plants.
- Constituent of the plant protoplasm/make the plant cell turgid.

1 mark

19. Why drainage is important in a water logged land.(2mks)

- Increase soil volume.
- Helps to increase soil temperature.
- Increase soil microbial activities.
- To reduce toxic substances from the soil.
- Facilitates increase in soil aeration.

20.State TWO reasons why the top soil layer of the soil profile should be maintained.

- Facilitates suitable soil temperature due to the presence of organic matter/darker colour.
- To maintain high level of microbial activities suitable for decomposition of organic matter.
- In order to maintain high level of organic matter in the soil.
- In order to maintain high level soil nutrients.

1 mark

21. .a) Distinguish between extensive and intensive farming. (2marks)

a) Distinguish between extensive and intensive farming.

- Extensive farming involves the production of crops and livestock on large tracts of land;while intensive farming involves maximum utilisation of the available land for maximum production.
- (1x1-1mark)

Extensive	Intensive
<i>Low capital investment per unit area</i>	<i>High capital investment per unit area</i>
<i>- Low labour requirement per unit area.</i>	<i>-high labour requirement per unit area.</i>
<i>Low yields per unit area of land.</i>	<i>high yields per unit area of land.</i>
Practiced in large piece of land	Practiced in large or small piece of land

Section B answer all the questions (20mks)

22. Sample weighing 200gm was heated in an oven at 105°C. The dry soil was weighed and the weight

recorded as 188 gm. The soil was then heated strongly after which was recorded as 180gms.

i. Calculate the percentage content of water in the initial soil sample. (2 marks)

$$200 - 188 = 12$$

ii. Why was the soil not heated strongly initially. (1 mark)

-To prevent loss of water from the soil.

iii. Calculate the weight of humus in the sample. (1 mark)

$$= 188 - 180 = 8 \text{ gms}$$

iv. **Find the percentage content of humus in the soil sample.** (2marks)

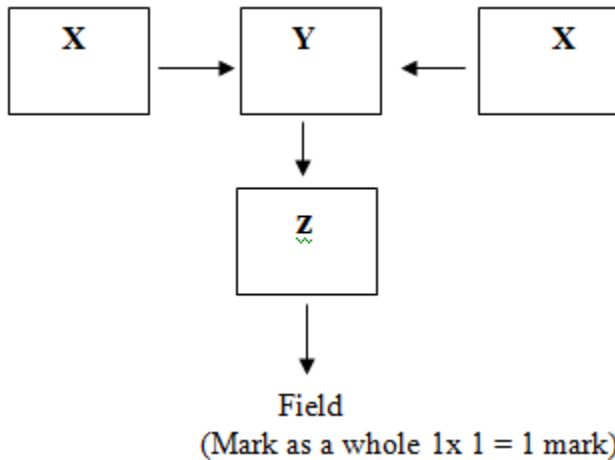
percentage humus in sample = $\frac{\text{weight of humus}}{\text{weight of dry soil taken}} \times 100$

$$\frac{8}{188} \times 100$$

weight of dry soil taken

$$8/188 \times 100 = 4.26 \%$$

23. The illustration below shows a four heap system of making compost manure. Study it and answer the questions that follow.



a) By use of arrows indicate on the diagram above how materials should be transferred from one heap to another till the material is applied in the field. (1 mark)

(b) Two indicators of a well decomposed manure (2mks)

- Absence of bad odour and instead the smell of forest soil.
- Light weight.
- Brown colour.
- Moist but not wet.
- Original nature of material not noticeable. (First 2 x 1 = 2 marks)

(c) Reasons for

i. Adding ash

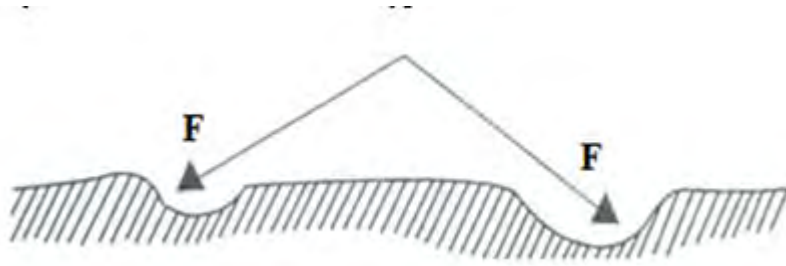
- Creating alkaline PH necessary for microbial activities.
- Increases level of phosphorous and potassium. (2 marks)

ii. Regular turning of the compost manure.

-Proper decomposition/improve microbial activities.

-Facilitate air circulation. (First 1x1 = 2 marks)

24. Study the illustration below of a type of terrace.



(i) Name the type of terrace.

-Broad based terraces. (1 x 1 = 1 mark)

(ii) Identify part labeled F.

-Terrace. (1 x 1 = 1 mark)

(iii) Ways in which terrace controls soil erosion.

-Slowing down surface run off.

-Embarkment holds down soil. (2 x 1 = 2 marks)

(iv) Disadvantages of this terrace.

Top banks harbour weeds making the cultivated area to be unproductive because exposed soil labour intensive. (First 1 x 1 = 1 mark)

Section c select any two questions (40mks)

25a) What is solifluction? (1mk)

This is the gravitational flow of surface materials saturated with water.

b) explain **four** factors affecting solifluction. (8mks)

-The slope of land.

-The nature of material.

- Climate.

-Vegetation cover.

-Human activities.

-Forces within the earth's crust

c) Describe the process involved in water treatment using a chemical treatment system. (11marks)

Stage 1: Filtration at water intake – water is made to pass through a series of sieves.

Large particles of impurities are trapped by these sieves.

State II: Softening of water-soda ash and alum are added into water. Soda ash softens the water while alum

helps to coagulate solid particles which finally settle down to the bottom of sedimentation tank.

Stage III: Coagulation and sedimentation –solid water stay in this tank for at least 36 hours to kill bilharzia worms.

Stage IV: Filtration- water is passed through a filtration tank that removes all remaining solid particles.

Sate V: Chlorination- A small amount of chlorine solution is added into water. The chlorine is used to kill micro-organisms in water.

Stage VI: Storage – Treated water is stored in a large tank before distribution 6 x 2 each= 12 marks;

26a) Describe the practices that a farmer should carry out to ensure uniform germination of seeds. (8 marks)

- Selecting seeds of the same size, age, variety and free from disease and pest.
- Planting the seeds at the same time.
- Preparing seeds at the same time.
- Preparing the whole field to the required uniform tilth.
- Planting at the right moisture content of the soil.
- Treating the seeds against soil borne pests and diseases.
- Planting at the correct depth.
- Treating the seed before planting to break seed dormancy. (1 x 8 each=8 marks)

b)i) differentiate between land subdivision and land fragmentation.(2mks)

ii) Explain **ten** effects of fragmentation and sub-division of land. (10 marks)

- Time is wasted while travelling from one holding to another or from the farmstead to the various fragments
- . -Proper and effective control of weeds and pests become difficult.
- Difficulties of following a sound farm plan.
- Difficulties in the supervision of the scattered plots.
- Difficult to control livestock parasites and diseases.
- Difficulties in carrying out various soil conservation measures.
- It is impossible for the farmers to restrict grazing in one holding only.
- Difficulties of offering agricultural extension advice.
- Poor agricultural productivity. (1 x 8 = 8 marks)

27. a) state **five** objectives of the million scheme.(6mks)

To reduce population pressure in the African reserves

To settle former employees of European farmers and squatters

To transfer land from white settlers to the Africans

To maintain production levels achieved by former white settlers

To increase agricultural production through better methods of land utilization

To solve the unemployment problems.

b) what information should be included in field operation records.? (7mks)

season , ploughing date , type of fertilizer, time of application ,

seed rate, diseases and their control, pests and their control, weed and their control,

harvesting date , yields/ ha , method of harvesting, remarks.

c) *Describe seven factors that should be considered when classifying crop pests.*

- Where the pests is found/field pests/storage pests.
- Feeding habits/types of damage.
- Scientific/Biological classification.
- Crop attacked
- Stage of development of the pest at which it causes damage
- Stage of growth of plant at which it is attacked.
- Part of the crop attacked. (7x1=7 mks)