**END OF TERM 1 EXAM, 2022**

**FORM 4**

**AGRICULTURE PAPER 1**

**MARKING SCHEME**

1. What is a production function? ( ½ mk)

* **This is the physical relationship between inputs and outputs.**

1. Name three types of production function. (1 ½ mk)
2. **Increasing Returns Production.**
3. **Constant Returns Production Function.**
4. **Decreasing Returns Production Function.**

3. Explain the following terms as used in Agricultural Economics. (2 mks)

a) Marginal Returns

* **This is the extra income obtained from the sale of one additional unit of output.**

b) Gross Domestic Product (G D P);

* **This is the total of goods and services produced by a Country within a period of one year.**

c) Opportunity cost;

* **This is the value of the best alternative foregone.**

d) Per Capital Income;

* **This the average income of the citizens of a country obtained by dividing GN 1 by the population.**

4. List four pieces of information found in a title deed; (2 mks)

1. **Name and ID of the owner.**
2. **Size of the land.**
3. **Land parcel number.**
4. **Date of registration.**
5. **Serial number / seal of issuing officer / signature.**

5. List four factors that lower the dd of a commodity. (2mks)

1. **High price of commodity.**
2. **Taxation.**
3. **Expected decrease in price of the commodity.**
4. **Reduced advertisement.**
5. **Decrease in population size.**
6. **Reduced consumer income.**
7. **Decrease in price of substances.**

6. List factors that determine the quality of compost manure. (2mks)

1. **Type of materials used.**
2. **Methods of preparations**
3. **Methods of storage**
4. **Length of decay**

7. Name any four types of financial books; (2 mks)

1. **Ledger**
2. **Journal**
3. **Cash book**
4. **Inventory**

8. Outline four methods of preparing seeds before planting; (2 mks)

1. **Seed cleaning**
2. **Seed inoculation**
3. **Breaking seed dormancy.**
4. **Seed dressing**
5. **Chitting**

9. List five factors that determine the competitive ability of weeds; (2 ½ mks)

1. **Short life cycles**
2. **Ability to produce many seeds**
3. **Ability to propagate vegetatively**
4. **Easy seed dispersal**
5. **Seeds have long viability**
6. **Extensive rooting system**

10. Highlight four cultural measures of controlling maize streak disease. (2 mks)

1. **Crop rotation**
2. **Rogueng**
3. **Early planting**
4. **Use of certified seeds**
5. **Field hygiene**
6. **Closed seasons**

11. Name one crop that is propagated by each of the following; (2 mks)

1. Stem tuber;

* **Irish potato**

1. Split;

* **Pyrethrum**

1. Slip;

* **Pineapple**

1. Bulbul;

* **Sisal**

12. Mention four aspects of rainfall that influence agriculture. (2 mks)

1. **Rainfall amount**
2. **Rainfall intensity**
3. **Rainfall distribution**
4. **Rainfall Reliability**

13. Give four ways in which land consolidation helps to promote sound farm management. (2 mks)

1. **Saves time and money**
2. **Makes supervision easy**
3. **Facilitates mechanization**
4. **Makes soil conservation measures easy**
5. **Makes it easy to have sound farm plan**

14. In which two forms is Nitrogen absorbed by plants? (1 mk)

1. **Nitrate ion**
2. **Ammonium ion**

15. Outline four pieces of information obtained in an invoice.

1. **Date of transaction**
2. **People involved in transacting**
3. **Type and qualities of goods delivered**
4. **Price per unit of the goods**
5. **Terms of payment**
6. **Invoice serial number**

16. A farmer was advised to apply 300kg of CAN /ha to top dress the maize crop.CAN contains 21% N.Calculate the amount of Nitrogen applied per hectare. (2 mks)

**21kg N - 100 kg CAN.**

**? - 300 Kg CAN**

**=300/100 \* 21 = 63 Kg N / ha.**

17. Give four ways of improving labor productivity in the farm. (2 mks)

1. **Training the labor force**
2. **Giving intensives to employees**
3. **Efficient labor utilization**
4. **Mechanization of farm operation**
5. **Provide efficient books**
6. **Provide transport wilier the farm**
7. **Proper payment of workers.**

SECTION B (20 MARKS)

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

18. The diagram below shows types of weeds. Study them and answer the questions that follow.

1. Identify the weeds E to H ( 4 mks)

E –Black Jack (*Bidens pilosa*)

F- Thorn apple (*Datura stramonium*)

G-Mexican marigold (Tegetes *minuta*)

H-Oxalis (Oxalis *latifolia)*

1. State one reason why it is difficult to control weed labeled H(1mk)

Have underground bulbs difficult to control

1. Name any two known weeds with underground structures which are difficult to remove (2mks)

Nut grass

Star grass

Couch grass

d) State four harmful effects of weeds (2mks)

Compete with crops for food, space and light

Some harbor pests and diseases

Increase the cost of production

Some have allelopathic effect

20. Maize requires 120kg/ha of phosphorus pentoxide (p2O5). How much of the compound fertilizer 20:20:10 would be applied to 0.4 hectare of land to achieve this rate. (2mks)

20kg is contained in 100kg of 20:20:10Therefore 120 kg of p2O5 will be contained in 120\* 100/20= 600kg/ha

0.4 ha= 600\*0.4= 240 kg of 20:20:10

21. The diagram below shows a graphical representation of an economic law

1. Name the economic law depicted in the curve above (1mk)

**The law of diminishing returns**

1. Explain what is happening in each of the zones A,B,C in relation to utilization of scarce resources (3mks)

Zone A - For each additional unit of input applied, the output increases because inputs are underutilized

Zone B- For each additional input, output increases at a slower rate because inputs are maximally utilized

Zone C- For each additional unit of input applied, the output decreases because the inputs are over utilized

22. The diagram below shows a cabbage seedling which has been attacked by a certain pest.

1. Identify the pest (1mk)

Cut worm

1. State two methods of controlling the above pest (2mks)

Use of appropriate insecticides

Physically picking and killing

Crop rotation

23. Below is a diagram illustrates a training practice carried out on some crops. Study it carefully and use it to answer questions that follow.

1. Identify the field practice (1mk)

Propping

1. State one condition that necessitate the practice (1mks)

Heavy bearing

Weak stems

SECTION C (40marks)

*Choose any two questions from this question*

24. a) Outline five factors that determine the quality of hay (5mks)

-forage species used

-stage of harvesting

-length of the drying period

-weather condition during the drying process

-condition of the storage structure

b) Explain five objectives of land tenure reform in Kenya (5mks)

-to encourage conservation measures on the land

-to achieve increasing productivity of both land and labor

-to encourage commercial instead of subsistence production in order to create employment

-to encourage farmers to invest more through offering tenure security

-to achieve flexibility in farming pattern, to meet changing national market demands

-to achieve effective utilization of land resources

c) Describe ten factors that can influence soil erosion (10mks)

-amount and intensity of rainfall

-type of soil

-slope of land

-soil depth

-vegetation cover

-overstocking

-deforestation

-planting of annual crops on steep slopes

-clean weeding

-ploughing up and down the slope

-indiscriminate burning of vegetation before cultivation

25. The following information was extracted from the farm records of Victory Farm as at 31/12/2017.

Sale of poultry……………………………………5000

Sale of milk……………………………………….6000

Telephone bill……………………………………..1000

Feed purchase…………………………………….. 2500

Purchase of calves ……………………………….3000

Purchase of lambs………………………………….2800

Sale of goats ………………………………………5000

Closing Valuation ………………………………….150, 000

Rent ……………………………………………….. 2000

Casual labour……………………………………… 2500

Sale of Cereal……………………………………… 12000

Opening Valuation…………………………………140,000

Depreciation of machinery……………………………500

Interest on loan……………………………………….. 400

Sale of sukuma Wiki……………………………………500

Purchase of chicks……………………………………….800

1. Prepare profit and loss account for victory farm using the above information (10mks)

**PROFIT AND LOSS ACCOUNT FOR VICTORY FARM FOR THE YEAR ENDING 31 STR DECEMBER 2017**

**Purchase and expenses** **Sales and receipts**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Open Valuation | 140,000 |  | Sale of poultry | 5000 |
| Bought feeds | 2500 |  | Sale of rice | 6000 |
| Bought lambs | 2800 |  | Sale of cereals | 12000 |
| Bought calves | 3000 |  |  | 500 |
| Rent | 2000 |  | Sale of sukuma wiki | 5000 |
| Casual labour | 2500 |  | Sale of goat | 150,000 |
| Purchase chicks | 800 |  | Closing valuation |  |
| Telephone bill | 1000 |  |  |  |
| Depreciation machines | 500 |  |  |  |
| Interest on loan | 400 |  |  |  |
| Total | 155,500 |  |  |  |
| **Profit** | **2300** |  |  |  |
|  | 178,500 |  |  | 178,500 |

1. Distinguish between closing and opening valuation (2mks)

O. V is the total value of all assets in the firm at the beginning of the financial year while

C.V is the total value of assets in a firm at the end of the financial year

1. State five functions of a farm manager (5mks)

Short term planning

Long term planning

Information gathering

Comparing the standards of one’s enterprises with set standards

Detecting weaknesses and constraints

Keeping farm records up to date

Implementing farm decisions and taking responsibility

1. State four guiding questions that a farm manager may ask while preparing a partial budget (2mks)

What is the extra cost is going to be incurred as a result of proposed change

What revenue is to be foregone?

What extra revenue is to be earned?

What costs are to be saved?

26. a) Describe the advantages of using seeds as planting materials (5mks)

Planting can be mechanized

Less bulky

Seeds can be mixed with fertilizers easily

Easily available hence are cheaper planting materials

Easy to treat against soil borne pests and diseases

Possible to develop new crop varieties

Seeds can be stored easily awaiting better conditions

Easy to handle

b) Describe the production of tomatoes under the following subheadings

1. Land preparation (4mks)

Prepare the land early

Clear bush and plough the land

Harrow to medium tilt

Eradicate all perennial weeds

Incorporate well rotten manure

Avoid portions of land with previously *solanacea* family

1. Transplanting (6mks)

Transplant at onset of rains when they have 2-3 true leaves

Make holes 15cm deep at spacing of mostly (90\*60 (Fresh market variety)

Apply 2 tablespoonful of DSP fertilizer

Water thaw nursery hours before uprooting using a garden trowel with a lump of soil

Put into planting holes and then fill with the holes with soil

Firm soil at the base

Water if necessary and apply mulch

1. State five advantages of using herbicides (5mks)

No root disturbance

Can destroy weeds with rhizomes

Less laborious

No interference with soil structure

Effective in closely spaced crops eg wheat

Can be used under wet conditions