**Names:**……………………………………………………… **Index:**……………………

**School Exam Number:**.........................................................**Signature**:……....................

*Candidates should* ***NOT*** *write their Centre Name or Centre Number anywhere on this booklet*

**P515/1**

**AGRICULTURE**

PRINCIPLES AND PRACTICES

**Paper 1**

3 August 2022

**2 ½ hours**



**ENTEBBE JOINT EXAMINATION BUREAU**

**Uganda Advanced Certificate of Education**

PRINCIPLES AND PRACTICES OF AGRICULTURE

**Paper 1**

*.*

**2 hours 30 minutes**

**INSTRUCTIONS TO CANDIDATES:**

*This paper consists of* Sections**A** *and* **B**

*Answer* **all** *questions in both* Sections

*Write answers to* Section***A*** *in the boxes provided*

*Answers to* Section***B*** *should be written in the spaces provided*

*No additional sheets of paper should be attached to this question paper*

|  |  |  |
| --- | --- | --- |
| **FOR EXAMINERS’ USE ONLY** | | |
| **SECTION** | **MARKS** | **EXAMINERS’ NO, SIGN** |
| **A** |  |  |
| **B.** 31 |  |  |
| 32 |  |  |
| 33 |  |  |
| 34 |  |  |
| 35 |  |  |
| 36 |  |  |
| 37 |  |  |
| **TOTAL** |  |  |

**A – AG – 1 2022 *Entebbe Joint Examination Bureau: Agriculture* Turn Over**

**SECTION A (30 Marks)**

*Write the letter corresponding to the correct answer in the box provided*

1. Which one of the following is most likely to be caused by magnesium deficiency?
2. Yellow leaves and stunted growth
3. Poor root growth
4. Weak stems
5. Yellow spotted leaves
6. Which of the following maintains the highest level of genetic uniformity?
7. Interbreeding
8. Selective breeding
9. Random breeding
10. Inbreeding
11. In a multi-enzyme controlled reaction

A enzyme 1 B enzyme 2 C enzyme 3X

If an excess of X controls the metabolic pathway of the reaction, the control mechanism is known as;

1. Multi-enzyme control
2. Excess inhibition
3. End product inhibition
4. Negative feed back
5. The list below gives the methods commonly used to control soil erosion.
   * 1. Mulching
     2. Planting vegetation
     3. Crop rotation
     4. Terracing

Which of these methods would best be used in an area with a steep slope?

1. (ii) and (iv)
2. (i) and (iv)
3. (ii) and (iii)
4. (ii) and (i)
5. Which one of the following may cause failure of an animal to show oestrous?
6. Production of progesterone
7. Production of prolactin hormone
8. Delayed drying of a cow
9. Production of oestrogen
10. A coffee plant known to be heterozygous for a recessive defect which makes the plant fail to produce viable seeds was self pollinated and gave rise to 600 seedlings. How many of the seedlings were heterozygous?
11. 150
12. 200
13. 300
14. 400
15. Under perfect market situations, profits are maximized when:
16. total revenue is equal to total costs
17. average costs are equal to average revenue
18. marginal costs are equal to marginal revenue
19. total costs are greater than total revenue.
20. Which of the following meiotic stages does the intimate association between homologous chromosomes weaken?
21. Prophase I
22. Prophase II
23. Metaphase I
24. Metaphase II
25. Which one of the following is not a conjugated protein?

1. Cytochrome
2. Casein
3. Antibodies
4. Egg yolk
5. The bacteria which convert nitrates to nitrites during the nitrogen cycle are an example of;
6. nitrogen fixing bacteria
7. nitrifying bacteria
8. putrefying bacteria
9. denitrifying bacteria
10. Fig.1 illustrates one of the economic principles during production

100

***C***

***A***

30

20

***B***

75

50

25

10

0

***Costs***

Which of the following principles is being illustrated by Section B?

1. Principle of economies of scale
2. Principle of equi-marginal returns
3. Principle of diminishing returns
4. Principle of opportunity cost

**Turn Over**

1. In crop growing, the peak water requirement is when
2. The seed is germinating
3. The plant is forming seeds
4. The plant is forming branches
5. Flowering is beginning
6. Which of the following will increase efficiency of feed utilization in livestock?
7. Feeding Animals Regularly
8. Giving Animals Appropriate Feeds
9. Giving Animals Supplementary Feeds
10. Giving Animals Extra Feeds
11. The measure of physical output per unit of input on the farm can be best described as;
12. Overdraft efficiency
13. Yield index
14. Economical efficiency
15. Technical efficiency
16. Which one of the following factors does not affect the discharge rate of a sprayer?
17. Nozzle Size
18. Operating Pressure
19. Shape of the Nozzle
20. Volume of Spray
21. Partial paralysis, coughing sneezing and bending of the neck in birds is due to
22. Salmonella
23. Coccidiosis
24. New castle
25. Fowl pox
26. Which pair of food stuff provides energy during starvation?
27. Carbohydrates and Protein
28. Carbohydrates and Lipids
29. Lipid and Proteins
30. Carbohydrates and Vitamins
31. Which of the following would easily transmit pathogens to a crop?
32. American bollworm
33. Aphids
34. Weevils
35. Cotton lygus
36. A feed with a starch equivalent of 80% means
37. 80kg of a feed yields as much energy as 80kg of starch
38. 100kg of a feed yields as much energy as 80kg of starch
39. 80kg of starch yields as much energy as 20kg of the feed.
40. 20kg of the feed yields as much energy as 80kg of starch
41. A farmer selected a sow because it reproduced regularly and easily which of these criteria was used to select for the above sow
42. Temperament
43. Productivity
44. Fecundity
45. Adaptability
46. Economies of scale is said to be of an advantage because
47. It lowers the production costs.
48. Reduces the risks of production
49. Reduces the cost of inputs
50. One pays less per unit of output
51. To ensure increased size of the litter in pigs, farmers should carry out;
52. Flushing
53. Drenching
54. Docking
55. Grooming
56. Which of the following factors may not influence the level of supply of agricultural commodities?
57. Level of demand
58. Level of technology
59. Absence of production quotas
60. Government policy
61. Which one of the following is the most effective way of controlling streak?
62. Early planting and growing of resistant varieties
63. Chemical spray against leaf hoppers
64. Chemical spray against maize streak disease
65. Close spacing to control leaf hoppers
66. Topping in tea is done to:
67. Encourage formation wider leaves
68. To form a plucking table
69. Stimulate growth of branches
70. Speed up maturity of the crop.

**Turn Over**

1. The amount of sulphate of ammonia fertilizer (20% N) a farmer would require to supply 60g of nitrogen is
2. 12.0 kg
3. 33.3 kg
4. 300 kg
5. 1200 kg
6. Which one of the following is a major factor in determining the distribution of Robusta coffee in Uganda?
7. Altitude and rainfall
8. Temperature and prevalence of pests
9. Soil fertility and soil PH
10. Infrastructure and market

1. Humus contributes greatly to the buffering capacity of the soil because it
2. holds excess soil nutrients
3. has high cation exchange capacity
4. cannot be broken down any further
5. has a high content of bases
6. Milk with a specific gravity higher than 1.032 mmHg is likely to be
7. adulterated with water.
8. from a stick animal.
9. adulterated with solids.
10. from an exotic animal.
11. Which of the following characteristics make calliandra a desirable *spp* for agro-forestry?
12. Ability to fix nitrogen in the soil
13. Having a moderate canopy
14. Ability to grow fast
15. Having a wide rooting zone

**SECTION B**

1. In an experiment, changes in products of an enzyme-catalysed reaction were determined at 250C, 400C and 600C. The results were presented graphically as shown in Figure 2. Study the figure and answer the questions that follow.

400C

*Qty* ***A***

600C ***B***

250C ***C***

*Time (mins)*

(a) Explain the pattern of changes in the quantities of products of reaction at each temperature. *(03 marks)*

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(b) Suggest what would happen to the reaction if the temperature was maintained at 450C. *(02 marks)*

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(c) Explain **two** other factors that influence enzyme activity. *(02 marks)*

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(d) Outline any **three** differences between lock key and induced-fit hypotheses of enzyme action. *(03 marks)*

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**Turn Over**

1. (a) Give **three** considerations that must be made before application of a pest control program. *(03 marks)*

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(b) State **two** ways in which chemical pest control can upset ecosystems.

*(02 marks)*

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(c) Suggest **two** reasons why pests may eventually flourish after a period of pesticide application. *(02 marks)*

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d) Suggest **three** characteristics of a good pesticide. *(03 marks)*

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1. (a) Outline **three** functional differences between a disc plough and a mould board plough. *(03 marks)*

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(b) Explain the circumstances under which a farmer would prefer to use a disc plough over a mould board plough. *(02 marks)*

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(c) Determine the power required to pull a four bottom 30cm mould board plough working to a depth of 15cm if the tractor is operated at a speed of 6kmh-1 and the soil resistance is 0.7kg/cm2*. (05 marks)*

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1. (a) What is **a warehouse receipt system** as used in agricultural production? (WRS) *(02 marks)*

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(b) Explain how farmers can benefit from WRS. *(04 marks)*

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(c) Explain **four** characteristics of agricultural produce that make them hard to market. *(04 marks)*

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**Turn Over**

1. (a) What precautions would you recommend to the farmer to adopt in order to produce good quality eggs? *(04 marks)*

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(b) What precautions are necessary at the hatchery to ensure successful incubation of eggs? *(03 marks)*

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(c) Explain how you would distinguish a good layer from a poor layer in a flock of birds. *(03 marks)*

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1. (a) Distinguish between **fertilizer grade** and **fertilizer ratio***. (01 mark)*

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(b) The following information was obtained from a fertilizer analysis done in order to estimate the percentage content of the essential elements of N, P and K. Study it and answer the questions that follow.

|  |  |  |  |
| --- | --- | --- | --- |
| **Samples** | **Elements (%)** | | |
|  | Nitrogen | Phosphorus | Potassium |
| **A** | 00 | 60 | 00 |
| **B** | 65 | 00 | 00 |
| **C** | 00 | 00 | 45 |
| **D** | 40 | 30 | 30 |

(i) From the results above, give the possible identities of the fertilizers ***A, B, C*** and ***D*** and give a reason in each case. *(04 marks)*

***A***

……………………………………………………………………………………………………………………………………………………………………

***B***

……………………………………………………………………………………………………………………………………………………………………

***C***

……………………………………………………………………………………………………………………………………………………………………

***D***

……………………………………………………………………………………………………………………………………………………………………

(ii) Giving a reason in each case, suggest which of those fertilizers you would recommend to apply to a soil with;

High pH *(01 mark)*

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Low pH *(01 mark)*

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(c) Outline **three** impacts of artificial fertilizer application to soil properties

*(03 marks)*

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1. (a) Suggest **four** challenges faced by farmers who own fragmented land.

*(04 marks)*

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**Turn Over**

(b) Outline the steps followed while consolidating land. *(04 marks)*

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(c) Highlight the main principles of Uganda’s current land policy. *(04 marks)*

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**END**