Candidate's Name: .....

Signature: .....

Random No.					Personal No.		

(Do not write your School/Centre Name or Number anywhere on this booklet.)

P515/1
PRINCIPLES AND PRACTICES OF AGRICULTURE
Paper 1
(Theory)
Nov./Dec. 2024
2½ hours

UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Advanced Certificate of Education

PRINCIPLES AND PRACTICES OF AGRICULTURE

Paper 1
(Theory)

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of **two** *Sections;* **A** *and* **B**.

All *questions are* **compulsory**.

Write answers to section **A** *in the boxes provided and answers to section* **B** *in the spaces provided.*

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

For Examiners' Use Only			
Section	**Question**	**Marks**	**Examiner's Signature & No.**
A	**1-30**		
B	**31**		
	32		
	33		
	34		
	35		
	36		
	37		
Total			

SECTION A (30 MARKS)

Write the letter corresponding to the correct answer in the box provided on the right hand side of each question.

1. In farm construction work, mortar is suitable for

A. fixing the wall plate.
B. flooring.
C. binding bricks.
D. making columns and pillars.

2. Fish pond fertilization is carried out to

A. stimulate egg laying by fish.
B. neutralize undesirable chemicals in the pond.
C. save costs on manufactured feeds.
D. improve pond water quality.

3. Brown streak disease in cassava can be effectively controlled by

A. planting uninfected stem cuttings.
B. close spacing of the crop to discourage white flies.
C. spraying recommended chemicals.
D. early planting of the crop.

4. Which one of the following explains how smoking bee hives protects the farmer from bee attacks during harvesting of honey?

A. Bees are temporarily blinded by smoke.
B. Bees are forced to eat honey and become heavy and drowsy.
C. Bees' stings are rendered ineffective.
D. Bees are scared by the smoke.

5. Planting Irish potatoes on ridges

A. improves aeration of the seedbed.
B. increases the depth of soil for root growth.
C. reduces weed growth within crop rows.
D. improves the supply of plant nutrients.

6. Selection of superior animals for breeding is usually done to

A. ensure uniformity in a herd.
B. maintain the desirable genes in a herd.
C. increase the number of desirable genes in a herd.
D. improve on the body conformation of animals in a herd.

7. Which one of the following can induce infertility in female animals?

A. Cryptochidism.
B. Persistent corpus luteum.
C. Excessive feeding of animals on protein feeds.
D. High temperature which affect growth of follicles.

8. Farmers are advised to remove all citrus buds below the budding areas in the first two years of tree growth in order to

A. prevent the occurrence of early decline of citrus.
B. encourage production of more flowers.
C. remove the effect of the root stock.
D. eliminate the pests that damage citrus fruits.

9. Which one of the following characteristics enables black jack to outcompete crop plants? It

A. has deep underground rhizomes.
B. produces a lot of viable seeds.
C. produces toxins which exclude other plants.
D. is able to withstand drought.

10. The development of brown sunken and soaked lesions on bean pods is a symptom of

A. angular leaf spot.
B. bean rust.
C. bean mosaic.
D. bean anthracnose.

11. Yellowing between the veins of plant leaves is likely to be due to

A. high soil pH.
B. nitrogen deficiency.
C. water logging.
D. magnesium deficiency.

12. A sample of partially digested food obtained from the rumen will contain a high concentration of

A. amylase enzyme.
B. acetic acid.
C. hydrochloric acid.
D. pepsin enzyme.

13. If a goat has a feed intake of 500 g of dry matter and passes out 150 g of dry matter in faeces, what is the apparent digestibility of the feed?

A. 76 %.
B. 70 %.
C. 30 %.
D. 23 %.

14. Figure 1 shows the relationship between price and supply of an agricultural produce.

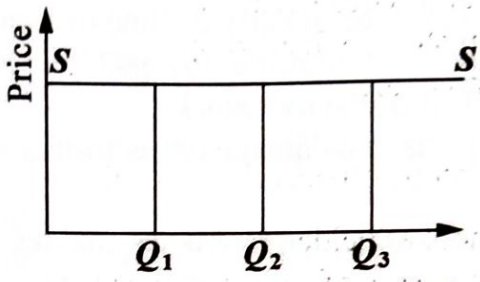

Fig. 1

Figure 1 illustrates that the elasticity of supply is

A. greater than zero but less than one.
B. equal to one.
C. zero.
D. perfectly inelastic.

15. Which one of the following products of forage digestion is the main source of energy for ruminants?

A. Glucose.
B. Glycogen.
C` Ammonia.
D. Acetic acid.

16. The role played by women in perennial cash crop farming is limited because women

A. are more interested in the food security of households.
B. have a more cardinal role of raising children.
C. have no control on resources such as land.
D. lack training in perennial cash crop farming.

17. Economic efficiency in farm production is the

A. cost of production weighted against the returns obtained.
B. measure of physical output per unit of input used in production.
C. income saved as a result of reduced expenditure in the production process.
D. income earned as a result of sales of each unit of output.

18. Which one of the following explains why farmers prefer composite maize varieties to other varieties for planting?

A. They require less rain for their growth.
B. They are early maturing.
C. The seeds can be retained for subsequent planting.
D. They yield better than other varieties.

19. A ductile construction material has the ability to

A. resist compression forces without loss of shape.
B. be drawn into thin wires when stretched.
C. spread into thin sheets when compressed.
D. bend without breaking.

20. Rhizomatic weeds can be effectively controlled by

A. applying contact herbicides.
B. removal and exposure of rhizomes to sunshine.
C. appropriate crop spacing.
D. slashing before flowering.

21. In bee keeping, the size of the brood raised by a colony depends on the

A. amount of royal jelly produced by the queen.
B. management of a bee hive.
C. absence of bee predators.
D. number of nursing bees present.

22. The reason for chopping fodder into smaller pieces before ensiling is to

A. increase silage intake by animals.
B. facilitate compaction of fodder in the soil.
C. regulate temperature in the materials during ensiling.
D. improve silage quality.

23. In the production function, when marginal product is equal to average product, the total product is

A. decreasing at a constant rate.
B. increasing at an increasing rate.
C. increasing at a decreasing rate.
D. decreasing at an increasing rate.

Turn Over

24. The presence of clay soil at a fish pond site is desirable because it aids in

A. smoothening the pond floor and walls.
B. retaining pond water.
C. supporting the weight of pond water.
D. preventing soil erosion around the pond.

25. Figure **2** is a supply curve.

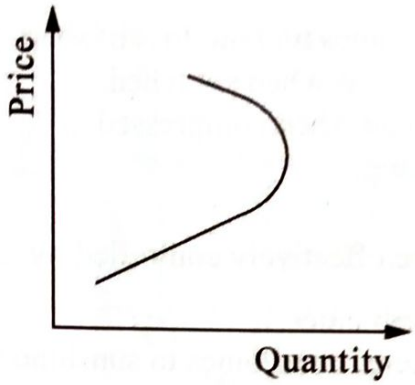

Fig. 2

Figure **2** illustrates a

A. normal supply curve.
B. supply curve for luxuries.
C. supply curve for subsistence production.
D. supply curve for commercial production.

26. Which one of the following practices improves the strength of concrete in the first two weeks?

A. Exposure to high temperature.
B. Regular compaction with a rammer.
C. Regular mopping of excess water.
D. Covering concrete with damp sack.

27. In the preparation of yoghurt, non-fat powdered milk is added to

A. inhibit the growth of pathogenic microorganism.
B. allow bacteria to convert lactose to lactic acid.
C. improve its texture and taste.
D. provide ideal conditions for fermentation.

28. In farm production, a farmer is advised not to increase variable inputs on a fixed resource when

A. marginal product is still greater than average product.
B. average product is equal to marginal product.
C. average product is at its highest level.
D. marginal product is equal to zero.

29. The main reason for including feed additives in a ration is to

A. provide bulk to satisfy animals.
B. increase the nutrient level of the feed.
C. prevent constipation in animals.
D. increase feed utilization by animals.

30. Packaging is an important function in marketing because it

A. reduces bulk by breaking up commodities into small quantities.
B. ensures constant supply of commodities.
C. increases satisfaction of consumers.
D. facilitates distribution of commodities.

SECTION B (70 MARKS)

Write your answers in the spaces provided.

31. (a) State **two** ways in which machines make work easier. (*02 marks*)

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(b) A machine at a farm construction site is used to lift bricks weighing 200 N using an effort of 100 N through a distance of 10 m. If the effort moves through a distance of 80 m, find the;

(i) mechanical advantage of the machine. (*02 marks*)

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(ii) velocity ratio of the machine. (*02 marks*)

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(iii) efficiency of the machine. (*02 marks*)

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(c) State **two** reasons why efficiency of the machine in (b)(iii) is not 100%. (*02 marks*)

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32. (a) Explain the term **sustainable agriculture**. (*02 marks*)

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(b) Outline **five** sustainable agricultural practices that farmers can carry out on a farm. (*05 marks*)

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(c) Suggest **three** measures that government can take to ensure sustainable use and management of natural resources in Uganda. (*03 marks*)

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33. (a) Give **two** soil conditions that promote leaching of soil nutrients.
(*02 marks*)

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(b) State **four** effects of leaching on soils. (*04 marks*)

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(c) Explain **four** ways in which organic matter improves the physical properties of soils. (*04 marks*)

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34. (a) Define the following terms: (*04 marks*)

(i) Chromosome.

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(ii) Genotype.

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(iii) Phenotype.

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(iv) Recessive gene.

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(b) A cross between a maize plant with broad white seeds and another one with narrow yellow seeds resulted into all F_1 offspring with broad white seeds. When the F_1 offspring were selfed, the following results were obtained:

298 broad white maize seeds.
101 narrow yellow maize seeds.
108 broad yellow maize seeds.
32 narrow white maize seeds.

(i) Determine the ratio of the phenotypes obtained in the F_2 generation. (*03 marks*)

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(ii) Which Mendelian law of inheritance is illustrated by the ratio you have determined in (b)(i)? (*01 mark*)

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(iii) Based on the ratio you have determined in (b)(i), which characters are recessive? *(02 marks)*

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35. (a) Define the following terms used in animal nutrition: *(04 marks)*

(i) Starch equivalent.

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(ii) Total digestible nutrients.

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(iii) Digestibility.

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(iv) Digestible crude protein.

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(b) Explain **six** animal factors which affect feed utilisation. *(06 marks)*

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36. (a) State **five** benefits of applying green manure on the farm. *(05 marks)*

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(b) Outline **five** characteristics of bean plants that make them desirable for use as green manure. *(05 marks)*

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37. Figure 3 shows the relationship between basal metabolic rate of a cattle and ambient temperature. Study the figure and answer questions that follow.

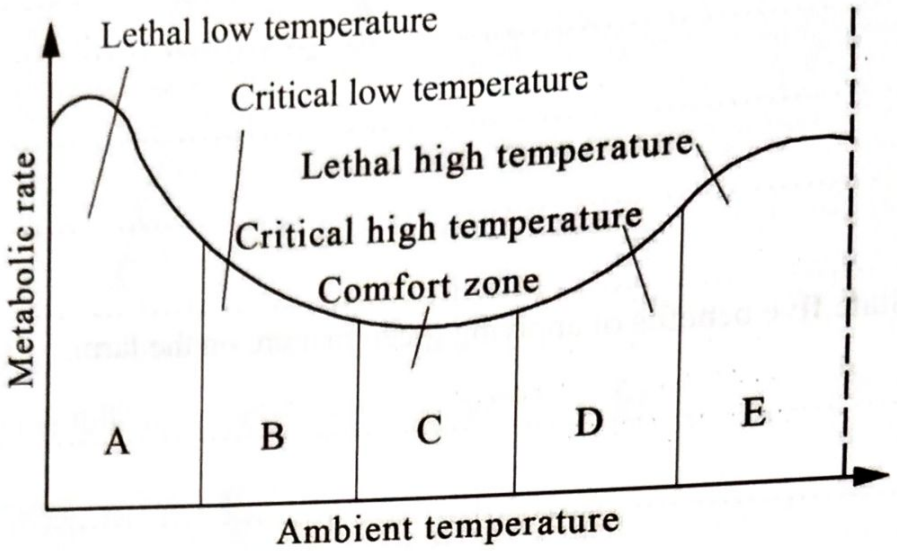

Fig. 3

(a) Suggest **three** observable changes that may occur in the body or behaviour of the cattle in regions **A** and **B**. (*03 marks*)

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(b) With a reason, suggest the type of cattle you would expect to survive better in region **B**. (*02 marks*)

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(c) Suggest **three** events that may occur in a cattle exposed to region **D** and **E**. (*03 marks*)

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(d) State **two** ways in which a farmer can improve conditions of a cattle raised in region **D**. (*02 marks*)

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