ELITE EXAMINATIONS BUREAU 2019

Uganda Advanced Certificate of Education

PRINCIPLES AND PRACTICES OF AGRICULTURE

PAPER 1

INSTRUCTIONS TO CANDIDATES:

- Answer all questions in both sections.
- *Answers to section A must be written in the answer sheet provided at the end of this section.*
- Write answers to section B in the spaces provided.
- No additional sheet of paper should be attached to the question paper.

FOR EXAMINERS USE ONLY

SECTION		**MARKS**
A		
	31	
	32	
B	33	
	34	
	36	
	37	
TOTAL		

SECTION A (30MARKS)

1. Which of the following are products of anaerobic respiration in plants?

A. Ethanol, carbondioxide, energy C. Lactic acid, carbondioxide

B. Carbondioxide, water, energy D. Ethanol, carbondioxide, water

2. Cattle belongs to the family of Bovidae because.

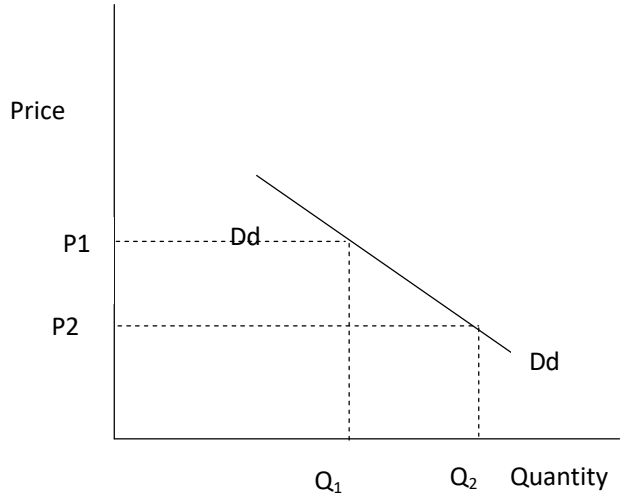
A. They have a back bone. B. They have even toes.

C. They have hooves. D. They have hollow horns.

3. Which one of the following is the least important factor to consider when putting up farm structures for livestock.

A. Cost of the materials.
B. Durability of the materials
C. Siting of the structure.
D. Panorama of the structure.

4. The figure below shows the type of demand in market.



The type of demand illustrated is

A. Elastic demand.
B. Inelastic demand.
C. Unitary demand
D. Perfectly elastic demand.

5. The feeding relationship among organisms in an ecosystem is referred to as

A. Food chain B. Food web C. Trophic level D. Ecological pyramid.

6. Phosphate fertilizers are applied by band placement because

A. They are mobile.
B. They are soluble.
C. They are easily fixed.D. They easily get lost in gaseous form

7. Which one of the following is not an effect of oxytocin hormone in a cow?

A. Promotion of milk letdown
B. Facilitation of sperm transport up the uterus
C. Induced labour during parturition.
D. Induce milk synthesis.

8. Land reforms refer to measures aimed at……

A. changing land ownership
B. improving land management and use
C. ensuring that everybody owns land
D. government's intentions to transfer people

9. Systemic pesticides are effective against pests because

A. They are toxic to pests

B. They cover all parts of the plant

C. They remain protected on the plant

D. They repel pests from the plant.

10.Which of the following is not a function of the Golgi body and vesicles in a plant cell?

A. Production of glycoproteins

B. Packaging and secretion of enzymes

C. Destruction of lysosomes

D. Formation of cell walls in plant cells.

11. In which parts of the animal body are the alveoli found?

A. Udder and pancreas. **B. Lungs and udder.**

C. Pancreas and lungs. D. Udder and liver.

12. Which one of the following organisms are primary producers in a food chain

A. Plants and algae. B. Mammals and mollusks.

C. Birds and algae. D. Bacteria and worms.

13. Marginal product refers to

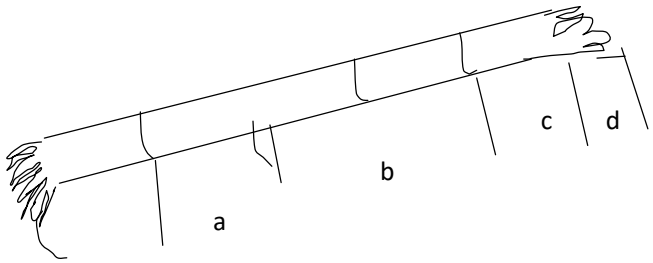
A. Product obtained from unit of input.

B. Extra product obtained from extra unit of input.

C. Output obtained from all the inputs used.

D. Total output divided by total input.

14. The figure below shows the parts of the plant



Which portion can be used for propagation?

A. b B. c C. d D. a

15. It is the advisable to feed mash rather than pellets in poultry management because mash is

A. More digestible than pellets

B. More palatable than pellets.

C. Cheaper than pellets

D. Prolongs the time for feeding

16. Which of the following is an effect of moisture stress in crops

A. Delayed maturity B. Hastened maturity

C. Delayed flowering D. Lack of fruiting

*17. Which one of the following maintenance practice is very important on an ox-plough that is frequently used?

A. Oiling moving parts

B. Sharpening the digging point

C. Replace worn out parts

D. Apply antirust paint on the body of the plough

18. Which one of the following is a reason for docking in sheep?

A. Mating becomes easier.

B. It discourages breeding of blow flies.

C. There is production of better quality meat.

D. It encourages faster growth.

19. The main reason for including legumes in a crop rotation is to:

A. improve the level of nitrogen in the soil

B. maintain useful bacteria in the soil

C. prevent soil erosion

D. improve farming methods

20. Which of the following is a facilitating marketing function

A. Transportation B. Storage C. Processing **D. Grading**

21. Which of the following methods is most suitable for conserving water for crop production in low rainfall areas?

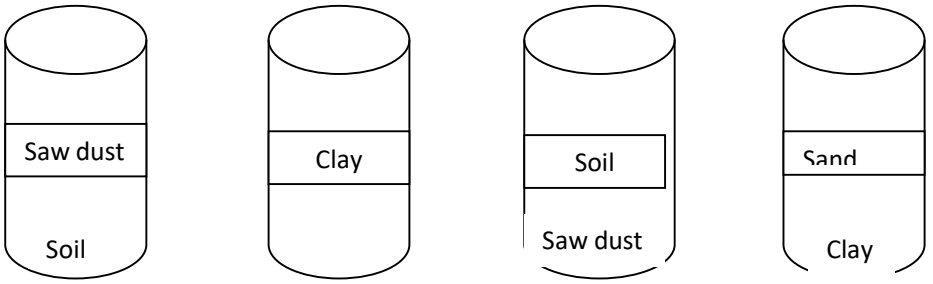
A. Growing cover crops.

B. Controlling weeds by cultivation

C. Covering the soil with organic mulches

D. Burning all vegetation cover.

22. Which one of the following is a proper potting medium for coffee cuttings?



A B C D

*23. The percentage of population of animals at a risk of becoming sick with a disease in an outbreak is……

A. mobidity rate C. mortality rate

B. epizootic rate D. population mortality rate

24. Which of the following occurs when dissolved oxygen concentration in a fish pond falls?

A. Fish swim to the bottom of the pond

B. Fish swim to the water surface gasping

C. Fish take in more water to get oxygen

D. Swimming activity of fish increases.

25. The minority of bees in a bee hive are

A. Workers **B. Drones** C. Queen D. Stingless bees

26. The following are reasons for hanging green plants in a poultry house **except**

A. Keeping birds busy

B. Controlling pests and diseases

C. Controlling cannibalism.

D. Providing vitamins to birds.

27. Njeru stock farm has an average daily temperature of 98.6^{o}F. Evaluate its temperatures in centigrade.

A. $26.72^{o}C$ **C.** $\mathbf{37^{o}C}$ **(98,6°F – 32) × 5/9 = 37°C**

B. $37.9^{o}C$ D. $92.5^{o}C$

28. Which of the following is not an adaptation of leaves for photosynthesis

A. Broad lamina B. Numerous chloroplasts in palisade cells

C. Airspaces between leaf cells. **D. Thick lamina.**

29. Which one of the following is not fencing material?

A. Wood B. Wire strainer C. Barbed wire D. Fencing nails

30. Which of the following is the normal presentation of a calf at parturition

A. Hind legs appear first

B. Hind legs and fore legs appear together

C. Fore legs appear first with the head

D. One foreleg appears first

Answer sheet for section A

1	**11**		**21**
2	**12**		**22**
3	**13**		**23**
4	**14**		**24**
5	**15**		**25**
6	**16**		**26**
7	**17**		**27**
8	**18**		**28**
9	**19**		**29**
10	**20**		**30**

SECTION B (70MARKS)

31(a). State the factors hindering the success of most agricultural policies and programs in Uganda. `

(0**4 marks)**

poorly developed rural infrastructure that limit production and market access

Land Tenure system: Land policy is a pivotal factor in determining whether a country's agricultural transformation/policy can simultaneously achieve sustained progress and inclusivity (contributing to widespread poverty reduction).

Gender related factors

Prioritized and differentiated strategies: Some of the existing agricultural transformation policies are not focused on changes that are most likely to kick-start rural economic growth. They try to cover everything.

Lack of well mobilized and motivated change agents-extension delivery system. Change agents provide the critical interface with farmers i.e., provide extension knowledge on farming inputs such as fertilizer, aggregating crops, or facilitating marketing services.

Lack of an investor mind-set: Policies to be successful, they require an investor mind-set is critical i.e., coordination among government, donors, and civil society is critical, but it is equally important from the start to plan for private-sector engagement. Without this, the transformation may proceed more slowly, stall, or not reach scale.

The willingness of governments, donors, farmers, companies, and civil society organizations to take risks and change behaviors to support implementation of policies is low.

(b). Briefly explain the effect of land use policies on agricultural production in Uganda. (06 **marks)**

Participatory land use policies empower local communities to increase agric production

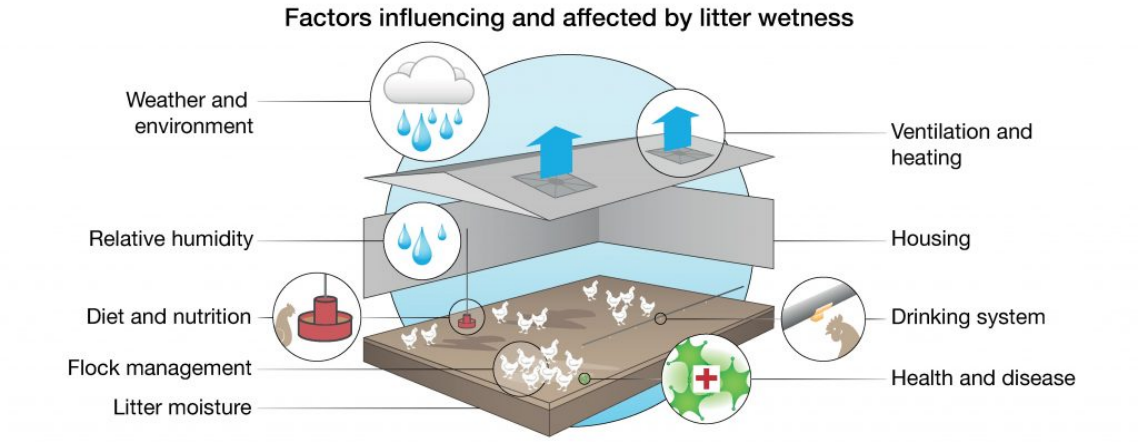
Land policies can promote equitable access to land for women farmers, for women farmers' form 80 percent of food processors in Uganda.

Lack of secure use rights and equitable access to finance, insurance, education and land hinders production

32. (a) Describe any six causes of wetness of litter in (a). (06 **marks)**

Poor housing management in relation to water intake of birds leading to spillage.

Nutritional factors: High intakes of potassium, sodium, magnesium, sulfate and chlorine will increase water intake and hence water excretion.



Watery Droppings: Diarrhea can be caused by nutrition and/or infectious agents. High intake of the minerals potassium, sodium, magnesium, sulfate or chloride can lead to excessive water consumption and wet droppings.

Moldy Feed: If broilers are provided moldy feed ingredients, consumption of mycotoxins may cause the droppings to be excessively wet. Mycotoxins are known to irritate the digestive tract and to cause marked pathological changes in the kidneys.

Disease: Numerous diseases cause poultry to excrete wet droppings. This effect may be primary where an infectious agent directly damages the alimentary canal resulting in diarrhea. Secondary effects may occur where birds go off feed but maintain water consumption, resulting in a higher moisture content of the droppings. Coccidia infections result in direct damage to the gut and will result in wet droppings.

Climate Control and Equipment Failure: Temperature and humidity largely influence water consumption and impact litter quality. For example, high temperatures within a broiler house lead to increased water consumption and wet litter.

Bedding Type: Straw, rice hulls, composed municipal garbage, and shredded cardboard have not useful bedding materials. These materials have low moisture absorption and release qualities which results into litter caking. Thus, proper choice of material is essential and will reduce problems associated with litter management.

(b). Outline any four disadvantages of deep litter system of poultry management. (0**4 marks)**

Incidences of cannibalism, feather plucking and toe pecking are common.

There is a likelihood of parasites and disease accumulation in the litter.

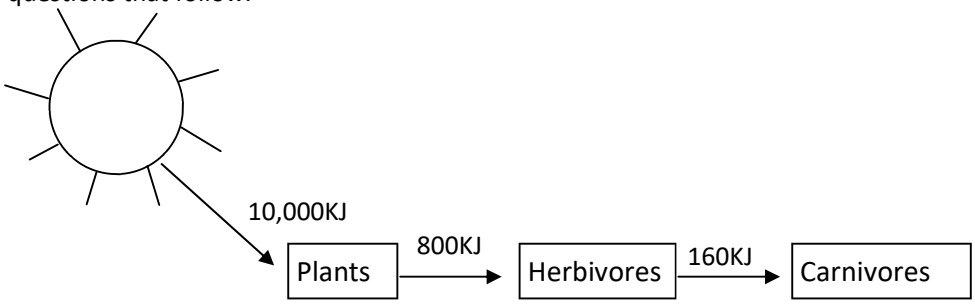
An individual record of egg production per bird is not possible. This is due to the fact that birds lay in common nests, hence it is not easy to know the poor layers.

Litter may be difficult to find in some areas

Eggs may become dirty especially if they are laid on the floor or if nesting boxes are not clean

Feed hoppers are waterers can be contaminated by litter if they are not placed well above the litter.

33. The figure below illustrates energy flow through a grazing food chain. Study it carefully and answer the questions that follow.



(a) Assuming a 10% energy loss at each trophic level, calculate the energy retained by herbivores. (3 marks)

energy retained by herbivores = (Energy received) –(10% of the energy received or absorbed)

= [800 – (0.1 x 800)]

= 720 KJ

(b) Explain why energy transfer from herbivores to carnivores is more efficient than from producers to herbivores. (3 marks)

The nutritional quality of material that is consumed by carnivores is high that it positive influences how efficiently energy is transferred, since they can can convert high-quality food sources (herbivores) into new living tissue more efficiently than low-quality food sources.

They also have quite a wide range of feed resource base to feed from.

(c) Despite the transfer from herbivores being more efficient, it is not readily 100%.

Suggest reasons for this fact. (2 marks)

It is due to processes that reduce the energy transferred between trophic levels such as respiration, growth and reproduction, defecation, and non-predatory death (organisms that die but are not eaten by consumers).

(d) State factors that limit the number of tropic levels in a food chain. (2 marks)

Energy available for higher *trophic levels*

Competition (intra and inter organism)

34 (a) State and explain the factors to consider when selecting wood for constructing farm structures.

(04mks)

durability,

strength,

labour,

availability,

workability,

serviceability,

cost sanitation.

(b) Give advantages and disadvantages of using wood compared to metals. (06marks)

Advantages

They are workable, cheap,

can be re-used are fairly strong.

Disadvantages

They can catch fire easily, decay if exposed to water

are affected by fungus and insects.

35 (a) Define the term Damping off. (02marks)

Damping off is a disease of seedlings caused by several different fungi and fungus-like organisms. This disease causes emerging seedlings to collapse, often submerged in a mass of white fungal growth.

Damping off is a horticultural disease or condition, caused by several different pathogens that kill or weaken seeds or seedlings before or after they germinate. It is most prevalent in wet and cool conditions.

(b) Outline any 4 environmental factors that may predispose seedlings to dumping off.

(04marks)

Use of contaminated pots and potting material

Splashing rain drops or irrigation water.

Wind

contaminated tools or by hose ends that have been in contact with dirt and debris.

(c) State any 4 signs of diseases in crops caused by viruses. (04marks)

- Mosaic leaf pattern
- Crinkled leaves
- Yellowed leaves
- Plant stunting

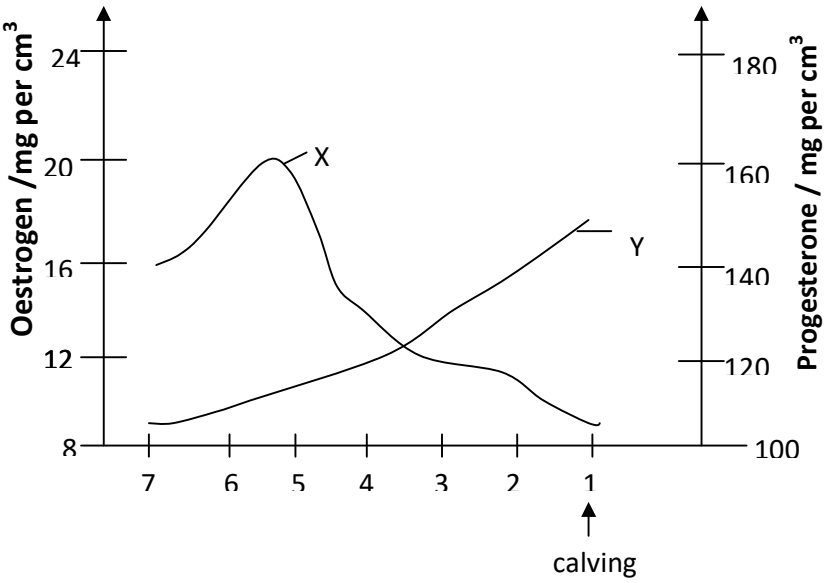
(1) change in colour—yellowing, green and yellow mottling, and vein clearing;

(2) malformations—distortion of leaves and flowers, rosetting, proliferation and witches'-brooms (abnormal proliferation of shoots), and little or no leaf development between the veins;

(3) necrosis—leaf spots, ring spots, streaks, wilting or drooping, and internal death, especially of phloem (food-conducting) tissue; and

(4) stunting or dwarfing of leaves, stems, or entire plants.

36.The graph below shows the mean concentrations of progesterone and oestrogen hormones in blood of 33 in-calf dairy cows during the seven weeks before calving down.



(a) Name the hormones represented by the letters X and Y (01 mark)

X***: Progesterone***

Y***: Oestrogen***

(b) (i) Briefly describe the changes shown on the graph (03 marks)

Progesterone: Steady/rapid rise in concentration between the 7th& 6th week prior to gestation with a peak concentration between the 6th and 5th week. After the 5th week, there's a sharp decline in concentration until point of calving.

Osetrogen: Only a steady/sharp/rapid increase in concentration is observed for the 7weeks prior to calving.

(ii) Give reasons for the changes described in (i) above. (02 marks)

High progesterone levels 6*weeks prior to calving is to maintain the pregnancy, avoiding pre-partum birth. Lowering levels towards calving is to ensure successful contraction of muscles at term.*

Increasing levels of the oestrogen hormone is to enhance proper muscle contraction during calving to reduce complicated conditions at term.

(c) What is the role of the placenta to an in-calf cow?(04 marks)

1. Fetal Gut: serving as a nutrient exchange mechanism between the maternal and fetal units.
2. Fetal Lungs: provides gas exchange for the fetus with oxygen going in and carbon dioxide coming out.
3. Fetal Kidney: working to remove waste for the fetus.
4. Fetal Liver: serving as a filter and detoxification system for the fetus.
5. Endocrine Function: tremendous amounts of hormones are produced by the placenta.
6. Temperature Regulation: serving to maintain a temperature that is slightly warmer than the dam's internal temperature.
7. Protection: the fluid that is contained within the placenta works as a protective surrounding for the delicate and growing fetus.

37 (a) Distinguish between soil reaction and cation exchange capacity. (02mks)

S**oil reaction** also referred to as **Soil pH** is an indication of the acidity or alkalinity of **soil** and is measured in **pH** units. Cation-exchange capacity is a measure of how many cations can be retained on soil particle surfaces. Negative charges on the surfaces of soil particles bind positively-charged atoms or molecules, but allow these to exchange with other positively charged particles in the surrounding soil water.

(b) Explain the effects of applying compost manure which is not properly rotten to soil. (04marks)

Nutrient Levels Are Low: The level of nutrients present in the fertilizer will below. In addition, the nutrients are usually complexed in organic chemical structure; this means using organic fertilizer may not produce the pop of color seen with a chemical fertilizer.

- Releases greenhouse gases
- Need to have a composting area

- Need to control rainfall runoff from the composting area
- Difficult to do with liquid manure
- Some manures might need a carbon source

(c) Explain the effect of low and high pH on phosphorous availability in the soil. (04marks)

Soils with pH values below 5.5 and between 7.5 and 8.5 limits P-availability to plants due to fixation by aluminum, iron, or calcium, often associated with soil parent materials.

The availability of phosphorus in the soil depends largely on the pH value. The greatest mobilisation occurs at a pH value between 6 and 7. The danger of phosphorus fixation is greater with an increasing soil pH. However, the availability can be improved at a relatively high pH (7.5-8) through addition of organic matter and at a high pH (>8) from addition of S or gypsum.

Increasing acidity of the soil results in the development of aluminium and iron phosphate. The availability of phosphorus can be improved by liming of the soil.

END