



*Dr. Blosa Science*

Sponsored by  
**The Science Foundation College**  
**Uganda East Africa**  
Senior one to senior six  
+256 778 633 682, 753 802709  
**Based On, best for science**

[digitalteachers.co.ug](http://digitalteachers.co.ug)



## UACE P515/1 Principles and practices of agriculture 2015

### SECTION A (30 MARKS)

Write the letter corresponding to the correct answer

- In cotton growing, the peak water requirement is
  - Boils are open
  - The plant is forming bolls
  - The plant is forming branches
  - Flowering begins
- The amount of Sulphate of ammonia fertilizers (20%N), a farmer would require to supply 60kg of nitrogen is
  - 12.0kg
  - 33.3kg
  - 300kg
  - 1200kg
- Cast iron is commonly used in construction of farm machines parts because it is
  - Hard and durable
  - Ductile
  - Cheap and malleable
  - Suitable for light casting
- Feeding standard as used in animal nutrition refers to the
  - energy value of feed stuffs
  - dry matter content of feed stuffs
  - nutrient content of feed stuff
  - nutrient requirement by livestock
- Which one of the following does not affect gene frequency in a population?
  - Mutation
  - Migration
  - Genetic drift
  - Epistasis
- Goods are said to be complementary when
  - an increase in price of one causes a decrease in quantity demanded of the other

- B. an increase in price one, causes an increase in quantity demanded of the other.
  - C. an increase in price of one, causes no change on the quantity demanded of the other
  - D. an increase in demand of one, causes a decrease in the demand of the other
7. Which one of the following is a major factor determining the distribution of Arabica coffee in Uganda?
- A. Altitude and rainfall
  - B. Temperature and prevalence of pest
  - C. Soil fertility and soil pH
  - D. Infrastructure and market
8. Humus contributes greatly to buffering capacity of soil because it
- A. Holds excess soil nutrients
  - B. Has high cation exchange capacity
  - C. Cannot be broken down any further
  - D. Has a high content of bases
9. Which one of the following influences the depth of penetration of a disc plough?
- A. Suction on the plough bottom
  - B. The tightness of the land wheel
  - C. The width of the furrow slice
  - D. The tilt angle of the disc
10. A feed with a starch equivalent of 80% means
- A. 80kg of a feed yields as much energy as 0kg of starch
  - B. 100kg of a feed yields as much energy as 80kg of starch
  - C. 80kg of starch yields as much energy as 20kg of the feed
  - D. 20kg of the feed yields as much energy as 80kg of starch
11. Milk with a specific gravity higher than 1.032 mmHg is likely to be
- A. Adulterated with water
  - B. From sick animal
  - C. Adulterated with solids
  - D. From an exotic animal
12. The profit calculated for farm production may be higher than the actual profit due to exclusion of
- A. Estimated costs
  - B. Opportunity cost
  - C. Implicit costs
  - D. Explicit cost
13. Which one of the following is the most effective way of controlling maize streak disease?
- A. Early planting and growing of resistant varieties
  - B. Chemical spray against leaf hopper
  - C. Chemical spray against maize streak disease
  - D. Close spacing to control leaf hopper
14. A gene which does not express itself unless it is homologous, is said to be
- A. polygenic
  - B. recessive

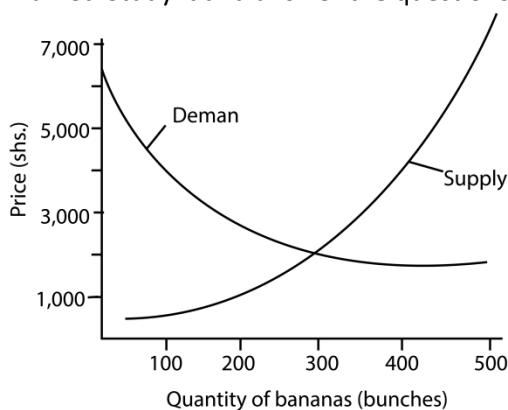
- C. sex linked
  - D. codominant
15. Which one of the following explains why drip irrigation is preferred to sprinkler irrigation?
- A. It does not require human labor
  - B. Water pipes used are cheap
  - C. A large area can be irrigated using this method
  - D. Water is supplied to the root zone of crops
16. Which one of the following may cause failure of an animal to come to heat?
- A. Production of progesterone
  - B. Production of prolactin hormone
  - C. Delayed drying of a cow
  - D. Irregular feeding
17. The Luteinizing hormone is secreted by the
- A. Corpus luteum
  - B. Anterior pituitary gland
  - C. Placenta
  - D. ovaries
18. Partial paralysis, coughing and bending of the neck in bird is due to
- A. Salmonella
  - B. Coccidiosis
  - C. Newcastle
  - D. Fowl pox
19. The following are desirable qualities of agroforestry tree species except
- A. Ability to fix nitrogen in the soil
  - B. Having a moderate canopy
  - C. Ability to grow fast
  - D. Having a wide rooting zone
20. The main reason aquatic plants are confined to surface layer of water is
- A. Plant nutrients occur only in surface layers of water
  - B. There is poor aeration in the deeper layers of water
  - C. There is more light at the water surface
  - D. Seed formation cannot occur under water
21. Which one of the following factors does not affect the discharge rate of a sprayer?
- A. Nozzle size
  - B. Operating pressure
  - C. Shape of nozzle
  - D. Volume of spray
22. Which of the following will increase the efficiency of feed utilization in livestock?
- A. Feeding animals regularly
  - B. Giving animals appropriate feeds
  - C. Giving animals supplementary feeds
  - D. Giving animals extra feeds

29. In cattle, the gene for hornless is dominant to that for horns. If a bull and a cow heterozygous for this character are mated, the percentage of offspring expected to have horns would be
- 75%
  - 50%
  - 25%
  - 100%
30. Indigenous cattle are usually introduced to a pasture before allowing exotic cattle to graze because the indigenous cattle
- Act as baits for ticks
  - Are resistant to harsh conditions
  - Can utilize poor pasture
  - Consume little pasture

### SECTION B

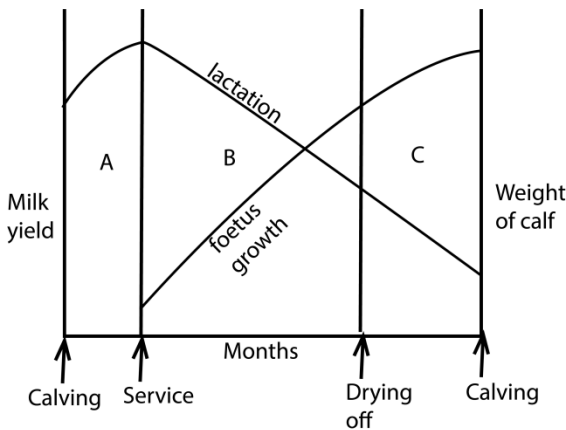
Answer all questions

31. (a) Give four reasons for drying seeds before storage. (04marks)  
 (b) Outline the physiological changes that take place during seed germination. (04marks)  
 (c) Give the importance of air and temperature in the process of germination. (02marks)
32. (a) Give the functions of the following to the coil ignition system of a tractor (05marks)
- Spark plug
  - Battery
  - Ignition coil
  - Distributor
  - Dynamo
- (b) Outline five faults that may lead to failure of the coil ignition system (05marks)
33. Figure below is a graph showing the relationship between demand and supply of bananas in a market. Study it and answer the questions that follow.



- (a)(i) Determine the equilibrium price of bananas (½ mark)  
(ii) What is the quantity of bananas demanded and supplied at equilibrium price? (½ mark)
- (b) Explain the state of demand and supply  
(i) below the equilibrium price (02marks)  
(ii) above the equilibrium price (02marks)
- (c) Give five factors that influence the price of a commodity (05marks)
34. (a) Distinguish between a population and a community in an ecosystem (02marks)  
(b) State six factors that influence the size of population in an ecosystem. (03marks)  
(c) Explain five ways in which agricultural practices have affected ecosystem (05marks)

35. Figure below shows lactation and foetus growth curves in a cow. Study it and answer the questions that follow.



- (a) State what is happening to the lactation and foetus growth in Stage A, B and C  
A (01mark)  
B (02mark)  
C(02marks)
- (b) At which stages should a farmer provide supplementary feeding?  
Give reasons for your answer in each case (05marks)

Suggested answers

1B    4D    7A    10B    13A    16A    19D    22B

2C    5D    8B    11C    14B    17B    20C    29C

3A    6A    9D    12C    15D    18C    21C    30A

Comments

1. The peak water requirement for cotton occurs during the **blooming to boll development stages**

2. Let x be the required mass

$$\frac{20x}{100} = 60$$

$$x = 300kg$$

4. Feedings standards are the tables, which indicate the quantities of nutrients to be fed to the various classes of livestock for different physiological functions like growth, maintenance, lactation, egg production and wool growth.
6. Complementary products are good that are directly associated with or paired with another good and their usage is closely related to each other e.g. Tennis balls and tennis rackets, Mobile phones and SIM cards etc.
7. Arabica Coffee: Predominantly grown in the mountainous regions of Uganda such as **Mt. Elgon and the Rwenzori ranges**, Ugandan Arabica is renowned for its bright acidity and distinct fruity flavors.
11. On the average the specific gravity of milk at 15 ° C/15 ° C is **1.032 (1.028-1.035)**. It is the result of the specific gravities of each of its components. Yoghurt milk and other dairy mixes containing sugar and added milk solids exhibit higher density and specific gravity than milk.
12. Implicit costs are non-monetary opportunity costs that result from utilizing an asset or resource it already owns. These cost are not recorded for accounting purpose and represent the loss in income but not a loss in profit
13. Disease control: Disease avoidance can be practiced by only planting resistant maize during the early season when viral inoculum loads are lowest. Leafhopper vectors can also be controlled with insecticides such as carbofuran.
16. Progesterone is produced by a pregnant cow and prevents ovulation
19. Having a wide rooting zone would interfere with tilling and growth of crops
20. Light is required for photosynthesis

## SECTION B

31. (a) Give four reasons for drying seeds before storage. (04marks)
  - To prevent molds and rot: seeds with high moisture rot easily
  - Properly dried seed have long shelf life
  - To prevent germination before planting
  - To reduce pathogenic contaminations
  - Maintain seed quality such good color
- (b) Outline the physiological changes that take place during seed germination. (04marks)
  - Hydrolysis of storage food material into soluble products
  - Translocation of soluble products from storage area to the actively growing centres.
  - Synthesis of enzymes, nucleic acids, structural proteins

- Respiration to provide energy for cellular activities
- Glucose and amino acids are translocated from the storage centres (endosperm or cotyledon) of the seed to the growing regions of the embryo.
- Cell division, elongation and differentiation leads to emergence of a seedling from a seed.

(c) Give the importance of air and temperature in the process of germination. (02marks)

- Air (oxygen) is required for respiration
- Optimum temperature activates enzymes

32. (a) Give the functions of the following to the coil ignition system of a tractor (05marks)

(i) Spark plug

- The spark plug is used for injecting the spark and which causes the start burning of the air-fuel mixture in the system

(ii) Battery

- It stores electrical energy and is used to provide electricity for ignition

(iii) Ignition coil

- It used to step the voltage

(iv) Distributor

- It provides ignition pulses to the individual spark plug-in sequences at the correct time.

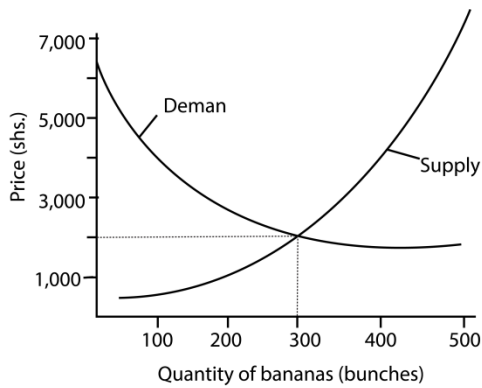
(v) Dynamo

- Recharges the battery

(b) Outline **five** faults that may lead to failure of the coil ignition system (05marks)

- Engine misfires
- Rough idle
- A decrease in car power, especially in acceleration
- Poor fuel economy
- Difficulty starting the engine
- Faulty Ignition Coil, Spark Plug, or Spark Plug Wires. An ignition issue can be caused by a faulty or failing ignition coil, spark plug, or spark plug wire set.
- Crank Position Sensor Failure.
- Cam Position Sensor.
- Distributor Pick-Up Coil / Hall Effect Sensor.
- Ignition Module.

33. Figure below is a graph showing the relationship between demand and supply of bananas in a market. Study it and answer the questions that follow.



(a)(i) Determine the equilibrium price of bananas (½ mark)

2000

(ii) What is the quantity of bananas demanded and supplied at equilibrium price? (½ mark)

300

(b) Explain the state of demand and supply

(i) below the equilibrium price (02marks)

Below equilibrium price demand increases due to low prices while supply decreases before due to low profits.

(ii) above the equilibrium price (02marks)

Above equilibrium price demand decreases due to high prices while supply increases before due to high profits.

(c) Give five factors that influence the price of a commodity (05marks)

- Cost of production which includes raw materials, labor and overhead cost
- Demand: high demand increases price
- Supply: high supply lowers prices
- Cost of substitutes
- Market conditions such as inflation, recession and change in consumers purchasing power
- Government policy such as tax Taxes
- Marketing and branding
- Transport costs
- Storage costs

34. (a) Distinguish between a population and a community in an ecosystem (02marks)

A population is the number of organism of a given species in a single area at a given time while a community is a community is a group or association of populations of two or more different species occupying the same geographical area at the same time.

(b) State six factors that influence the size of population in an ecosystem. (03marks)

- Presence of water
- Presence of sunlight
- Disease
- Parasites
- Predators

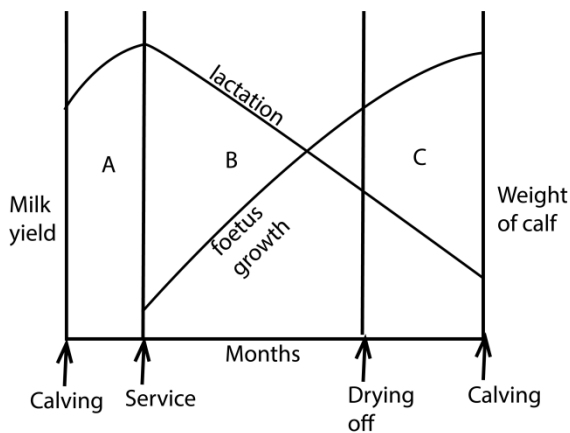


- Presence of food
- Pollution

(c) Explain five ways in which agricultural practices have affected ecosystem (05marks)

- Deforestation removes habitats and reduces biodiversity
- Soil degradation reduce ability of the soil to support microorganisms
- Fertilizers cause water pollution
- Poor management of wastes lead to air pollution
- Greenhouse gas emission cause global warming
- Pesticides cause soil, water and air pollution
- Overstocking leads to deforestation encroach on land for forests and wildlife
- Monoculture destroys soil fertility
- Bush fire destroy animal and plant habitat

35. Figure below shows lactation and foetus growth curves in a cow. Study it and answer the questions that follow.



(a) State what is happening to the lactation and foetus growth in Stage A, B and C

A (01mark)

Milk yield increases to the peak

B (02mark)

Foetus weight increases

Milk yield decreases

C(02marks)

Foetus weight increase

Milk yield decreases/ceases

(b) At which stages should a farmer provide supplementary feeding?

Give reasons for your answer in each case (05marks)

In A supplements such as calcium and proteins are required to stimulate cow's appetite and to achieve high peak production

In B supplements are required to promote milk production, foetal growth and regain cow body weight/conditions

At stage C, supplements are required to promote foetal growth and increase body weight/conditions to ensure adequate body reserve for next early lactation.

**Please obtain free downloadable notes of general paper, biology, economics, geography etc. from [digitalteachers.co.ug](http://digitalteachers.co.ug) website**

**Thanks**

**Dr. Bbosa Science**