



Dr. Blosa Science

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The Science Foundation College
Uganda East Africa
Senior one to senior six
+256 778 633 682, 753 802709
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UACE P515/1 Principles and practices of agriculture 2013

SECTION A (30 MARKS)

Write the letter corresponding to the correct answer

- When a section of a chromosome breaks off and rejoins the chromosome at another end, the mutation is known as
 - Translocation
 - Inversion
 - Duplication
 - Deletion
- Which one of the following nutrient element becomes less available to plants at low pH?
 - Potassium
 - Manganese
 - Iron
 - Phosphorus
- Total cost in production includes the following except
 - Variable cost
 - Fixed cost
 - Opportunity cost
 - Overhead cost
- The main aim of breeding livestock is to
 - Increase the number of animals on the farm
 - Improve the quality and quantity of animal products
 - Prevent in-breeding in a herd
 - Improve the health status of the animal being bred
- Which one of the following is true about the use of an ox-plough? It is
 - affected by the vegetation cover of an area
 - not affected by soil moisture content
 - suitable for certain types of crops to be grown
 - not affected by soil type
- Which one of the following describes the anti-rickets triangle?
 - Calcium phosphorus and vitamin D are needed in equal proportions to prevent rickets

- B. Calcium phosphorus and vitamin D are required to prevent rickets
 - C. Calcium phosphorus and vitamin D are used in treatment of rickets
 - D. Any of the calcium phosphorus or vitamin D can be used to prevent rickets
7. Which one of the following is a problem associated with use of legume pasture?
- A. May produce excessive amount of nitrogen in the soil
 - B. Are not resistant to drought
 - C. Can out compete other pasture species
 - D. Consuming them excessively can cause bloat
8. Storage life for meat is not influenced by the
- A. Health of the animal before slaughter
 - B. Conditions of storage
 - C. Age of the animals
 - D. Treatment the animal received before slaughter
9. Water moves from lower layers to upper layers of soil by
- A. Capillarity attraction
 - B. Cohesion force
 - C. Adhesive force
 - D. Suction pressure
10. The aim of budgeting on a farm is to
- A. prepare a balance sheet
 - B. estimate expected returns
 - C. control farm income
 - D. work out each analysis
11. Which one of the following implements is not used for primary tillage?
- A. Subsoiler
 - B. Disc plough
 - C. Chisel plough
 - D. ridger
12. Which one of the following flower structure may encourage self-pollination in a crop plant?
- A. Stigma being above anther
 - B. Carpels and stamens maturing at same times
 - C. Plants being Dioecious
 - D. Anthers hanging outside the flower
13. Phosphate fertilizers are applied at planting time in order to
- A. Encourage germination
 - B. Reduce nutrient loss through leaching
 - C. Promote root growth
 - D. Avoid scorching crop plant
14. Which of the factors to consider when planning a farm lay-out **except**
- A. Security
 - B. Topography
 - C. Type of enterprise

- D. Size of the farm
15. Light intensity affects the rate of transpiration by
- Providing light energy which affects evaporation of water from plants
 - Providing heat energy necessary for transpiration
 - Affecting air movement around the leaf surfaces
 - Influencing opening and closing of stomata
16. When the presence of a gene suppresses the effect of a gene at another locus, this is known as
- linkage
 - epistasis
 - splicing
 - coupling
17. Skimming is carried out in milk processing to
- Break down fat globules to form a uniform mixture
 - Remove moisture from the curd
 - Separate cream from milk
 - Centrifuge milk to remove particles
18. Which one of the following is a means of improving agricultural marketing?
- Specialization in production of some products
 - Mechanization of farming
 - Construction of storage facilities
 - Training of farmers in agricultural production
19. Which one of the following is an adaptation of indigenous breed to live in tropics?
- Strong legs to walk long distances
 - Humps to store fat for adverse conditions
 - Thin coat with many sweat glands for temperature regulation
 - Big body to store food for dry season
20. High temperatures increase the rate of transpiration because they
- Cause opening of the stomata to allow evaporation of water
 - Provide latent heat of vaporization encourage evaporation
 - Provide transpiration pull causing evaporation
 - Increasing the water potential in the plant, encouraging evaporation
21. Figure 1 shows production possibilities available to a farmer

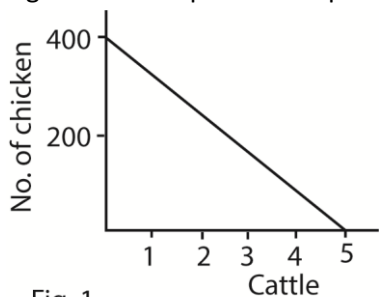


Fig. 1

If a farmer decided to rear chicken only how many of them would be reared?

- 5

- B. 100
 - C. 200
 - D. 400
22. Subsoil may have high accumulation of mineral salts due to
- A. Regular leaching
 - B. Gravitational pull from upper layers
 - C. Capillary attraction between upper and lower layer
 - D. Plant roots taking mineral salts to subsoil
23. Coffee husks are considered good litter for a deep litter house because they
- A. Absorb moisture
 - B. Are fine and soft
 - C. Are non-poisonous
 - D. Are cheap and readily available
24. Concrete is reinforced with steel in the construction of beams in order to
- A. make the concrete harder
 - B. increase compression strength of concrete
 - C. increase tensile strength of the concrete
 - D. make the beam resistant to the wear and abrasion
25. Which one of the following is the most important determinant of the efficiency of land use?
- A. Good management
 - B. Security of tenure
 - C. Improved technology
 - D. Availability of capital
26. Plants for hay making are cut at early flowering stage in order to
- A. make hay palatable
 - B. reduce moisture content in the hay
 - C. obtain maximum nutritive value from the plant
 - D. increase the keeping quality of hay
27. Which one of the following is a measure of breeding efficiency?
- A. Number of live offspring
 - B. Length of lactation period
 - C. Age at first service
 - D. Length of calving interval
28. Which of the following minerals are rarely deficient in ruminants?
- A. Potassium and sodium
 - B. Calcium and phosphorus
 - C. Manganese and calcium
 - D. Phosphorus and sulphur
29. Materials are composted prior to application in order to
- A. ease application
 - B. improve the carbon : nitrogen ratio
 - C. obtain a dark color

- D. reduce on the moisture content
30. Which one of the following is not a use of egg yolk when mixed with semen for artificial insemination?
- Act as a buffer solution
 - Dilutes the semen
 - Preserves semen
 - Provides nutrients for the semen

SECTION B

Write answers in the spaces provided

31. (a) Differentiate between transpiration and evaporation (01marks)
 (b) Explain **six** factors that affect transpiration (06 marks)
 (c) Give **three** ways by which transpiration is important to the plants (03marks)
32. (a) Outline **five** ways in which tractor power can be used (05marks)
 (b) Give **five** functions of a planter (05marks)
33. (a) Explain the meaning of the following as used in farm management
 (i) Partial efficiency (03marks)
 (ii) Overall efficiency standards (03marks)
- (b) Give **four** reasons for assessing farm efficiency (04marks)
34. (a) Give four reasons why it is advisable to use calves reared on the same farm for stock replacement. (04marks)
 (b) Give six factors to consider when starting a dairy farm. (06marks)
35. (a) (i) explain pesticide resistance as applied in crop production (02marks)
 (ii) Give four causes of pesticide resistance (04marks)
 (b) suggest four ways of ensuring pesticide use (04mark)

Suggested answers

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

Comments

2. Low pH levels disturb the uptake of elements such as **potassium, calcium, magnesium, and molybdenum**.

6. Rickets is a condition that results in weak or soft bones in children and is caused by dietary deficiency vitamin D, calcium and phosphorus or genetic causes

9. **Capillary action (sometimes called capillarity, capillary motion, capillary rise, capillary effect, or wicking) is the process of a liquid flowing in a narrow space in opposition to or at least without the assistance of any external forces like gravity.**

11. In agriculture, ridging is a method of creating raised beds for crops. It is often used in hilly or mountainous regions, where the land is too steep for conventional farming methods. Ridging involves digging a trench along the length of the field, then piling the soil from the trench onto the middle of the field to create a raised bed.

17. Skimmed milk is made by removing all the milk fat from the whole milk

Section B

31. (a) Differentiate between transpiration and evaporation (01marks)

Transpiration is the process in which water is lost as water vapor from the aerial parts of the plants through stomata while the process that changes liquid water to gaseous water (water vapor)

(b) Explain **six** factors that affect transpiration (06 marks)

- Temperature: the higher the temperature, the higher the rate of transpiration due to availability of vaporization energy.
- Humidity: high humidity lows the rate of evaporation. Increase in the rate of humidity reduce water potential gradient between the leaf and environment reducing the rate of evaporation.
- Air movement/wind: blows away saturated air around the stomata facilitating evaporation. Strong wind lower the rate of transpiration due to closure of the stomata.
- Atmospheric pressure: the lower the atmospheric pressure, the greater the rate of evaporation.
- Light increases transpiration by opening the stomata and increasing temperature.
- Availability of water: Transpiration is high when there is continuous water supply in the soil to replace the lost water.

(c) Give **three** ways by which transpiration is important to the plants (03marks)

- absorption of water
- absorption of mineral salts
- cooling of the plants.

32. (a) Outline **five** ways in which tractor power can be used (05marks)

- Plowing field
- Tilling
- Planting
- Harvesting

- Mowing grass and other vegetation to maintain pasture
- Transport goods, equipment and livestock
- Spreading fertilizers
- Landscaping such as grading, leveling and moving soil or rocks
- Brush hogging or clearing thick vegetation and underbrush

(b) Give **five** functions of a planter (05marks)

- (i) To carry the seeds and fertilizer in separate compartments.
- (ii) To open furrows at uniform depths
- (iii) To meter the seeds and fertilizers
- (iv) To deposit the seed and fertilizer in the furrows in an acceptable pattern
- (v) To cover the seed and fertilizer and compact the soil around the seed.

33. (a) Explain the meaning of the following as used in farm management

(i) Partial efficiency (03marks)

Partial efficiency in farm management refers to evaluating specific aspects of farm operations to improve overall performance. This approach involves using partial indicators to measure efficiency in areas like feed utilization, energy use, and cost management.

(ii) Overall efficiency standards (03marks)

Overall efficiency standards in agriculture aim to optimize the use of resources to maximize productivity and sustainability

(b) Give **four** reasons for assessing farm efficiency (04marks)

- To increase productivity
- To optimize process and reduce wastage leading to cost reduction
- To ensure sustainability
- To improve resource management
- To adapt to changes in climate and market fluctuation

34. (a) Give four reasons why it is advisable to use calves reared on the same farm for stock replacement. (04marks)

- There is reduced risks of introducing new disease and parasite on the farm
- It is cheaper than purchasing animals from outside sources
- Calves born and raised on the farm are better adapted to the local climate, feed, and management practices.
- Enables maintenance and improvement of the genetic traits that are beneficial for the farm
- Enables control over the breeding and rearing process, allowing for better tracking of performance and productivity.

(b) Give six factors to consider when starting a dairy farm. (06marks)

- **Capital:** This is the amount of money needed in the construction of farm structures, purchase of land and the animals.
- **Land:** There should be enough land to accommodate farm buildings and paddocks where animals can graze from
- **Labor** Both skilled and unskilled labor is required for performing specialized work and manual labor respectively.
- **Reliable source of water:** Water is needed by the animals for drinking and also in other farm operations like cleaning and mixing of drugs.
- There should be a ready **market** for milk and milk products which is easily accessible to reduce the costs incurred in looking for market.
- **Pastures:** The place in consideration should have good pastures since milk production of the animals is greatly affected by the quality of what they eat.
- There must be **reliable transport** so that the farmer can easily move farm products to the market and bring back inputs.
- **Security** is a very important factor for any business since insecurity results into loss of property and life
- **Government policy** in place should be encouraging dairy farming through the provision of good breeds of cattle
- **Climate** in the area should be good for dairy farming.

35. (a) (i) Explain pesticide resistance as applied in crop production (02marks)

Pesticide resistance describes **the decreased susceptibility of a pest population to a pesticide that was previously effective at controlling the pest.**

(ii) Give four causes of pesticide resistance (04marks)

- Genetic factors; high genetic variation promote resistance
- Mutation
- Prolonged use of a single pesticide
- Unwarranted use of pesticides
- Use of broad spectrum pesticides such as DDT that kill natural enemies of the pests.
- Use of sub-lethal concentration of pesticides
- High population of pests
- Non-uniform application of pesticides in the field

(b) Suggest four ways of ensuring effective pesticide use (04mark)

- Use the right concentration/dose of the pesticide
- Timing of application or stage of the pest to which the pest is applied
- Weather conditions at the time of application. Usually rain/dew may dilute the pesticides leading to ineffectiveness.
- Right choice of pesticide effective for the identified pest

- Rotate the use of different pesticides to prevent resistance
- Use the appropriate equipment and techniques to ensure even coverage and reduce drift.
- Combine biological, cultural, mechanical, and chemical methods to manage pests. This reduces reliance on pesticides and helps prevent resistance.
- Regularly monitor pest populations and pesticide effectiveness to adjust strategies as needed.
- Follow safety guidelines to protect yourself and others from exposure.

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Thanks

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