



Dr. Blosa Science

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UACE P515/1 Principles and practices of agriculture 2001

SECTION A (30 MARKS)

Write the letter corresponding to the correct answer

- Which one of the following is a sign of a good layer?
 - Legs, beaks and cloaca are pigmented
 - Pelvic bones are pliable
 - Comb and wattle are small
 - Pelvic bones are hard and brittle
- Which one of the following is **not** a likely result of polyploidy in plants
 - Increased hardness
 - Resistance to diseases
 - Decreased hybrid vigor
 - Formation of seedless fruits
- Which one of the following explains why small seed are planted near the soil surface?
 - Because they need a lot of sunshine
 - To avoid early exhaustion of the food reserve
 - To facilitate early photosynthesis
 - To make full use of nutrients near the surface
- The following are protozoa disease except
 - Coccidiosis
 - Anaplasmosis
 - Bovine babesiosis
 - Black quarter
- Which one of the following soil conditions is least suitable for activity of nitrifying bacteria in the soil
 - Low soil pH
 - Neutral soil pH
 - High soil pH
 - Tiny soil particles
- Which one of the following does not affect the hatchability of fertilized eggs
 - Turning of eggs
 - Size of the eggs

- C. Ventilation
 - D. humidity
7. Which one of the following explains why cotyledons are brought out of the ground in epigeal germination?
- A. Rapid elongation of epicotyl
 - B. Rapid elongation of hypocotyl
 - C. Cotyledons are stuck to the plumule
 - D. Cotyledons rapidly increase in size during germination
8. Which one of the following are common features attributed to both foot and mouth disease and rinderpest in cattle/
- A. Highly infectious and contagious
 - B. Caused by protozoa
 - C. Accompanied by diarrhea and dysentery
 - D. Continuous salivation
9. Oil in the oil bath air cleaner should be kept at the correct level because
- A. Fouling of in of the spark plug may occur
 - B. Oil may be drawn into the cylinder
 - C. Oil may be drawn into the filter mesh
 - D. There may be insufficient cleaning of air
10. An animal feed is described as basal if it has a high
- A. Protein content
 - B. Fiber content
 - C. Fat content
 - D. Energy content
11. Which of the following is not a gonadotrophic hormone?
- A. Follicle stimulating hormone
 - B. Luteinizing hormone
 - C. Progesterone
 - D. HCG
12. Which of the following represents the correct sequence of preparation of cheese
- A. Curdling → salting → ripening → removal of moisture
 - B. Removal of moisture → curdling → salting → ripening
 - C. Salting → ripening → removal of moisture → salting
 - D. Curdling → removal of moisture → salting → ripening
13. In order to increase the tractors tyre grip on ground
- A. Tractor should be driven fast
 - B. Tractor tyres should be water ballasted
 - C. Tractors tyres should be light inflated
 - D. Tractor should be driven slowly
14. Which one of the following constitutes only liabilities in a balance sheet?
- A. Buildings, bank loan, tractor
 - B. Overdraft, bank loans, unpaid salaries

- C. Cash at hand, owner's capital, depreciation
 - D. Land, over draft, bank loans
15. When a change in price of a commodity produces only a slight change in demand, the demand for commodity is
- A. elastic
 - B. stable
 - C. rigid
 - D. inelastic
16. The process in which nitrogen is released from organic compounds is known as
- A. nitrification
 - B. denitrification
 - C. mineralization
 - D. immobilization
17. Which one of the following, when in low level in blood, cause milk fever
- A. Phosphorus
 - B. Calcium
 - C. Magnesium
 - D. iron
18. Which one of the following is the correct sequence of molecules in a double helix of DNA?
- A. Phosphate – sugar – guanine – cytosine – sugar – phosphate
 - B. Thymine –sugar – phosphate – adenine – sugar – phosphate
 - C. Sugar –phosphate – cytosine – guanine – sugar – phosphate
 - D. Phosphate – sugar – guanine – thymine – sugar - phosphate
19. When the differential lock of a tractor is engaged, the tractor
- A. cannot move forward
 - B. can turn corners easily
 - C. moves slowly while ploughing
 - D. can be reversed easily while ploughing
20. which one of the following explains positive and negative geotropism in roots and shoots respectively
- A. High auxin concentration accelerated growth in roots but not in shoots
 - B. Low auxin concentration accelerates growth in roots but retards it in shoot
 - C. High auxin concentration accelerated growth in both roots and shoots
 - D. Low auxin concentration accelerated growth in both roots and shoots
21. Which one of the following inhibits milk let down in dairy cattle?
- A. Prolactin
 - B. Adrenaline
 - C. Oxytocin
 - D. estrogen
22. Which one of the following conditions would cause the highest rate of photosynthesis in plants?
- A. 0.13% CO₂ at 20°C
 - B. 0.03% CO₂ at 20°C

- C. 0.03% CO₂ at 30°C
 - D. 0.02% CO₂ at 35°C
23. Calcium demand in cattle is lowest during
- A. fattening
 - B. early growth
 - C. gestation
 - D. lactation
24. Inventory record should have the following except
- A. number of equipment
 - B. quality of animal feeds
 - C. quantity of milk produced
 - D. quantity of fertilizer
25. Which one of the following measures may be used to control price fluctuation of a farm product?
- A. Contract farming
 - B. Extension farming
 - C. Plantation farming
 - D. Intensive farming
26. Which of the following insects transmits the cassava mosaic disease?
- A. Aphid
 - B. Cotton stainer
 - C. Maize leaf hopper
 - D. Tobacco whitefly
27. Which one of the following reaction occurs in the light stage of photosynthesis
- A. Reduction of carbon dioxide
 - B. Splitting of water molecules
 - C. Synthesis of phosphoglyceric acid
 - D. Synthesis of phopsphoglyceraldehyde
28. Opening and closing of valves in an internal combustion engine is controlled by
- A. Timing chain
 - B. Cam shaft
 - C. Crank shaft
 - D. piston
29. Which of the following products of cellulose digestion?
- A. Acetic acid and propionic acid
 - B. Butyric acid and glucose
 - C. Fructose and glucose
 - D. Galactose and sucrose
30. Deficiency of manganese in chicks causes a condition known as
- A. Tetany
 - B. Slip tendon
 - C. Depraved appetite
 - D. Anaemia

SECTION B

Answer all questions

31. (a) Suggest five reasons why crop prices to fall immediately after harvesting especially in developing countries. (05marks)
- (b) Give five reasons why agricultural products should be processed before they are marketed. (05 marks)
32. (a) Explain the meaning of the following (01 marks each)
- (i) digestive crude proteins
 - (ii) starch equivalent
 - (iii) food conversion ratio
- (b) State four factors to be considered while formulating a ration. (04marks)
- (c) State three factors that affect feed intake in farm animals (03marks)
33. (a) State six factors that must be addressed prior to mechanizing agriculture. (06marks)
- (b) Give four factors for introducing draught technology in farming business. (04marks)
34. (a) Explain how pH influences availability of phosphorus ions in soil. (02marks)
- (b) (i) State four ways in which soil pH may fall (04marks)
- (ii) Suggest four factors that should be considered when adding lime to soil (04marks)
35. (a) What is biological pest control? (02marks)
- (b) Give five factors that may affect the effective ness of biological pest control. (05marks)
- (c) State three benefits that can be derived from biological control. (03marks)

Suggested answers

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

Comments

10. Basal feed are concentrated sources of energy and are especially rich in starches e.g. grains (maize, wheat and sugars)

SECTION B

31. (a) Suggest five reasons why crop prices to fall immediately after harvesting especially in developing countries. (05marks)

- increase supply
- Inadequate storage facilities
- inadequate preservation methods
- lack of processing facilities
- poor marketing strategies
- poor transport system
- bulkiness which makes it hard to transport agricultural produces

(b) Give five reasons why agricultural products should be processed before they are marketed. (05 marks)

- adds value
- reduce risks of contamination
- increases nutritional value
- increase shelf-life
- reduce transportation
- improve packing
- increase marketability
- reduce post-harvest losses

32. (a) Explain the meaning of the following (01 marks each)

(i) digestive crude proteins

It is the amount of proteins which can be digested or it is a measure of nitrogen in the feed consumed that is retained in the body of an animal after subtracting losses through feces.

(ii) starch equivalent

This is the measure of energy requirement which an animal can obtain from the food. Or it is the amount of pure starch which has the same energy as 100kg of a feed

(iii) food conversion ratio

The **food conversion ratio (FCR)**, also known as the feed conversion ratio, is a measure of an animal's efficiency in converting feed mass into the desired output, such as meat, milk, or eggs. It is calculated by dividing the mass of the feed consumed by the mass of the output produced

(b) State four factors to be considered while formulating a ration. (04marks)

- The nutrient requirement of for the animals whose ration is being formulated
- The palatability or acceptability of the final mixture of the feed
- Availability of ingredients and their cost
- Health status of the animal
- Nutrient composition of the final mixture
- Physical nature of feed
- The wholesomeness of the food stuff. The final mixture should not harmful to the animals
- Age of animal i.e. young animal requires high proportion of proteins
- Level of production for instance milk cattle and layer require high proportion of calcium.
- Type of animal for instance ruminant can digest cellulose

(c) State three factors that affect feed intake in farm animals (03marks)

- Age of animal: old animals eat more than young animals
- Health status: health animals usually eat more than sick animals
- Temperature: animals usually eat more on cold weather to generate heat
- Palatability of feeds: animals eat more of palatable feeds than non-palatable feeds
- Hunger and appetite
- Size of animals: big animals such cattle eat more food than young animals
- Nutrient content of feed: animals adjust their feed intake to achieve their body requirement.
- Management practices such as frequency of feeding animals
- Availability of water

33. (a) State six factors that must be addressed prior to mechanizing agriculture. (06marks)

- Unavailability of machines
- High maintenance cost of agricultural machines
- Poor land tenure system which discourage long term planning
- Land fragmentation that makes it uneconomical to mechanize.
- Lack of adequate capital to purchase farm machinery.

- Market for agricultural produces
- Inadequacy of skilled manpower

(b) Give four factors for introducing draught technology in farming business. (04marks)

- Availability of hardy draught animals and necessary equipment
- Availability of skilled man power in use of oxen cultivation
- Long experience in use of oxen cultivation
- Good climate
- Presence of light soils that can easily be worked with oxen
- Presence of pests and disease resistant animals
- Availability of land for farming and grazing
- Relatively flat land that is easy to plough
- Presence of veterinary services

34. (a) Explain how pH influences availability of phosphorus ions in soil. (02marks)

Low pH reduces phosphate ion availability to plant.

Near neutral pH values is optimum for uptake of phosphate

(b) (i) State four ways in which soil pH may fall (04marks)

- **Soil formed from acid rocks:** Rocks such as granite contain an excess of silica (Quartz) which combine with water to form acids.
- **Presence of humus:** Humus may react with iron and aluminum to form complexes which undergo hydrolysis to yield hydrogen ions responsible for acidity.
- **Water lodging:** This causes hydrolysis of some of cations in the soil which may release hydrogen ions leading to soil acidity
- **Rain water:** atmospheric carbon dioxide combines with rain water to form a weak carbonic acid responsible for soil acidity.
- **Cultivation of crops:** The growing of crops can cause acidity when the plant absorbs cations that can be replaced by hydrogen ions.
- **Fertilizers application:** Application of fertilizers increases cations and anions content in the soil. When the nitrates are leached they move along with cations leaving the H^+ behind
- **Biological activities in the soil:** Anaerobic decomposition of organic matter leads to formation of weak acids in the soil e.g. lactic acids, ethanoic acids (Organic acids)

- **The presence of sulphides in the soil:** The sulphides in the soil can also cause soil acidity due to the production of H^+ ions.

(ii) Suggest four factors that should be considered when adding lime to soil (04marks)

- Soil pH; very high or low pH may require amending
- Buffer capacity of the soil i.e. ability to resist change in pH after addition of lime
- Amount of bases in the exchange complex.
- Type of crops to be grown i.e. each crop requires a different pH
- Fineness of the materials to be used for liming
- Amount of manganese present in the soil

35. (a) What is biological pest control? (02marks)

This is the control of the pest population below the economical threshold using their natural enemies in form of predator, pathogen, parasite etc.

(b) Give five factors that may affect the effectiveness of biological pest control. (05marks)

- Biological control agent searching ability
- Adaptability of biological control agent to wide range of environments
- Host specific of biological control agent
- Ability biological control agent to multiply in order to control the target organism
- Should not cause a lot of damage to crops and animals
- Ability to raise biological control agent artificially
- Ease of the biological control agent to distribute/apply

(c) State three benefits that can be derived from biological control. (03marks)

- It requires less labor
- It is selective to the target organism
- Long lasting from season to season
- Can be easily employed to remote areas
- cheap

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