

Advanced Agricultural Science

Agriculture · Answer Key · 25 Questions

1. Which soil horizon, commonly referred to as subsoil, primarily contains accumulated minerals leached from the layers above?

- A) O Horizon
- B) A Horizon
- C) B Horizon**
- D) C Horizon

2. What is the primary function of the process known as 'nitrification' in the nitrogen cycle within agricultural soil?

- A) Conversion of ammonia to nitrates**
- B) Fixation of nitrogen from air
- C) Denitrification of soil
- D) Absorption of nitrogen by roots

3. In livestock management, what does the term 'feed conversion ratio' (FCR) specifically measure?

- A) Weight of water consumed vs weight gained
- B) Efficiency of turning feed into body mass**
- C) Time taken for animals to reach maturity
- D) Percentage of protein in animal feed

4. Which nutrient is specifically identified as the primary limiting factor for plant growth in highly acidic, weathered Australian soils?

- A) Potassium
- B) Nitrogen
- C) Phosphorus**
- D) Magnesium

5. What is the primary role of a 'legume' in a crop rotation system regarding soil health?

- A) Increasing soil salinity
- B) Fixing atmospheric nitrogen**
- C) Reducing soil pH levels
- D) Increasing weed germination

6. Which irrigation method is most effective at reducing water loss through evaporation in arid agricultural regions?

- A) Furrow irrigation
- B) Flood irrigation
- C) Drip irrigation**
- D) Sprinkler irrigation

7. What is the scientific term for the loss of soil fertility due to the excessive accumulation of salts in the root zone?

- A) Salinization**
- B) Leaching
- C) Erosion
- D) Calcification

8. In genetics, what is the 'heterosis' effect often utilized for in commercial livestock breeding?

- A) Reducing gestation periods
- B) Increasing disease resistance in purebreds
- C) Superior performance of crossbred offspring**
- D) Controlling gender ratios

9. Which component of an Integrated Pest Management (IPM) program involves the introduction of natural predators to control crop pests?

- A) Cultural control
- B) Biological control**
- C) Chemical control
- D) Mechanical control

10. What is the purpose of 'vernalization' in the development of certain winter cereal crops?

- A) Requirement of cold exposure to trigger flowering**
- B) Accelerated growth in high heat
- C) Prevention of pest infestation
- D) Improvement of grain protein quality

11. Which livestock production system is characterized by high stocking densities and rapid turnover cycles?

- A) Extensive grazing
- B) Pastoralism
- C) Intensive confinement**
- D) Organic rotational grazing

12. What is the primary objective of 'no-till' farming practices regarding soil structure?

- A) Increasing soil compaction
- B) Promoting rapid decomposition
- C) Minimizing physical disturbance to soil**
- D) Facilitating easier weed removal

13. Which essential plant macronutrient is most responsible for the development of strong root systems and energy transfer via ATP?

- A) Phosphorus**
- B) Nitrogen
- C) Calcium
- D) Sulfur

14. What does the 'cation exchange capacity' (CEC) of soil determine?

- A) The water retention ability of sand
- B) The soil's ability to hold and supply nutrients**
- C) The speed of nutrient leaching
- D) The total biomass of soil microbes

15. Which greenhouse gas is most commonly associated with enteric fermentation in ruminant livestock?

- A) Nitrous oxide
- B) Carbon dioxide
- C) Methane**
- D) Ozone

16. In plant pathology, what is a 'vector' in the context of viral crop diseases?

- A) The viral DNA strand
- B) The organism that transmits the virus**
- C) The symptom shown on the leaf
- D) The pesticide used to treat the virus

17. What is the function of the 'cambium' layer in the stems of dicotyledonous crops?

- A) Water transport
- B) Photosynthesis
- C) Secondary growth (thickening)**
- D) Nutrient storage

18. Which type of erosion is characterized by the formation of small, shallow channels caused by concentrated water runoff?

A) Sheet erosion

B) Rill erosion

C) Gully erosion

D) Wind erosion

19. What is the defining characteristic of a 'monoculture' farming system?

A) Growing multiple species in one field

B) Growing a single crop species repeatedly

C) Rotating crops every season

D) Integrating livestock with crops

20. Which hormone is naturally produced by plants to stimulate fruit ripening and senescence?

A) Auxin

B) Gibberellin

C) Ethylene

D) Cytokinin

21. What is the purpose of 'calcium carbonate' (lime) application in agricultural soil management?

A) Lowering soil pH

B) Increasing soil pH

C) Increasing phosphorus toxicity

D) Reducing soil moisture content

22. In wool production, what does the term 'micron' measure?

A) The length of the wool fibre

B) The diameter of the wool fibre

C) The weight of the fleece

D) The tensile strength of the fibre

23. Which agricultural technology utilizes satellite imagery to apply inputs like fertilizer at varying rates across a field?

A) Precision agriculture

B) Conventional tillage

C) Subsistence farming

D) Hydroponics

24. What is the primary function of 'stomata' on the underside of plant leaves?

- A) Water absorption
- B) Gas exchange**
- C) Structural support
- D) Light absorption

25. Which measure of soil moisture represents the amount of water held after excess water has drained away by gravity?

- A) Permanent wilting point
- B) Field capacity**
- C) Hygroscopic water
- D) Saturation point