

Advanced Botanical and Ecological Literacy

Biology · Answer Key · 20 Questions

1. Which plant hormone is primarily responsible for the closure of stomata during periods of water stress?

- A) Auxin
- B) Gibberellin
- C) Absciscic acid**
- D) Ethylene

2. In the context of plant vascular tissue, which cells are characterized by having thick, lignified secondary walls and are typically dead at maturity?

- A) Parenchyma
- B) Collenchyma
- C) Sclerenchyma**
- D) Companion cells

3. Which process describes the movement of sugars from source tissues to sink tissues in plants?

- A) Transpiration
- B) Translocation**
- C) Osmosis
- D) Guttation

4. What is the primary function of the Casparian strip in plant roots?

- A) To facilitate lateral root growth
- B) To control the entry of water into the vascular cylinder**
- C) To store starch reserves
- D) To protect the root apical meristem

5. Which type of photosynthesis is an adaptation for plants in arid environments to minimize photorespiration by fixing CO₂ at night?

- A) C₃ photosynthesis
- B) C₄ photosynthesis
- C) CAM photosynthesis**
- D) Chemosynthesis

6. The mutualistic relationship between plant roots and fungi that aids in nutrient uptake is known as what?

- A) Rhizobia
- B) Mycorrhiza**
- C) Lichens
- D) Endophytes

7. What is the specific name for the male gametophyte of a seed plant?

- A) Ovule
- B) Pollen grain**
- C) Carpel
- D) Embryo sac

8. Which plant pigment is essential for detecting the ratio of red to far-red light to regulate germination and flowering?

- A) Carotenoid
- B) Chlorophyll b
- C) Anthocyanin
- D) Phytochrome**

9. In woody plants, what tissue forms the annual growth rings observed in a cross-section of the trunk?

- A) Primary xylem
- B) Secondary xylem**
- C) Primary phloem
- D) Cork cambium

10. Which phenomenon involves a plant's growth response to mechanical stimuli, such as wind or touch?

- A) Thigmotropism**
- B) Phototropism
- C) Gravitropism
- D) Hydrotropism

11. What is the term for the shedding of plant parts, such as leaves or fruit, in response to hormonal signals?

- A) Senescence
- B) Abscission**
- C) Dormancy
- D) Vernalization

12. Which specific floral part matures to become the fruit in angiosperms?

- A) Stigma
- B) Style
- C) Ovary**
- D) Ovule

13. What is the primary structural polysaccharide found in the cell walls of plants?

- A) Chitin
- B) Glycogen
- C) Cellulose**
- D) Amylose

14. Which element is the central atom in a chlorophyll molecule?

- A) Iron
- B) Magnesium**
- C) Calcium
- D) Potassium

15. Plants that complete their entire life cycle--from germination to seed production--within a single growing season are called what?

- A) Perennials
- B) Biennials
- C) Ephemeral
- D) Annuals**

16. What is the term for the process where water is released from the leaves of plants in liquid form, typically through hydathodes?

- A) Evaporation
- B) Transpiration
- C) Guttation**
- D) Condensation

17. Which meristematic tissue is responsible for the secondary growth (increase in thickness) of stems and roots?

- A) Apical meristem
- B) Lateral meristem**
- C) Intercalary meristem
- D) Ground meristem

18. Which plant defense mechanism involves the production of chemical compounds that inhibit the growth of competing plants?

- A) Allelopathy**
- B) Commensalism
- C) Symbiosis
- D) Mimicry

19. The conversion of atmospheric nitrogen into ammonia by bacteria in root nodules is known as what?

- A) Nitrogen fixation**
- B) Denitrification
- C) Nitrification
- D) Assimilation

20. What type of plant tissue is responsible for the transport of water and dissolved mineral nutrients from the roots to the shoots?

- A) Phloem
- B) Xylem**
- C) Epidermis
- D) Cambium