

Bio 202 Sample Questions

1. Which of the following would not contribute to water uptake by a plant cell?
 - a) An increase in the water potential of the surrounding solution
 - b) A decrease in pressure on the cell exerted by the wall
 - c) The uptake of solutes by the cell
 - d) A decrease in water potential of the cytoplasm
 - e) An increase in tension on the solution surrounds the cell
2. Stomata open when guard cells
 - a) Sense an increase in CO₂ in the air spaces of the leaf
 - b) Flop open because of the decrease in turgor pressure
 - c) Become more turgid because of an influx of K⁺ followed by the osmotic entry of water
 - d) Accumulate water by active transport
3. Which of the following is not part of the transpiration-cohesion-tension mechanism for the ascent of xylem sap
 - a) The loss of water from the mesophyll cells which initiates a pull of water molecules from neighboring cells
 - b) The transfer of transpirational pull from one water molecule to the next owing to the cohesion caused by hydrogen bonds
 - c) The hydrophilic walls of the narrow tracheids and xylem vessels that help maintain the column of water against the force of gravity
 - d) The active pumping of water into the xylem of roots
 - e) The lowering of water potential in the surface film of mesophyll cells due to transpiration
4. Which of the following does not appear to involve active transport across the membranes?
 - a) The movement of mineral nutrients from the apoplast to the symplast
 - b) The movement of sugar from mesophyll cells into sieve tube members in maize
 - c) K⁺ uptake by guard cells during stomatal opening
 - d) The movement of mineral nutrients into cells of the root cortex

5. Movement of phloem sap from a sugar source to sugar sink
 - a) Occurs through the apoplast of sieve tube members
 - b) May translocate sugars from the breakdown of stored starch in a root up to developing shoots
 - c) Is similar to the flow of xylem sap in depending on tension or negative pressure
 - d) Depends on the active pumping of water into sieve tubes at the source end
 - e) Results mainly from diffusion

6. The productivity of a crop declines when leaves begin to wilt mainly because
 - a) The chlorophyll of wilting leaves decomposes
 - b) Flaccid mesophyll cells are incapable of photosynthesis
 - c) Stomata close preventing CO₂ from entering the leaf
 - d) Photolysis , the water splitting step of photosynthesis cannot occur when there is a water deficiency
 - e) An accumulation of CO₂ in the leaf inhibits the enzymes required for photosynthesis

7. Imagine cutting a live twig from a tree and examining the cut surface of the twig with a magnifying glass you locate the vascular tissue and observe a growing droplet of fluid exuding from the cut surface. This fluid is probably
 - a) Phloem sap
 - b) Xylem sap
 - c) Guttation fluid
 - d) Fluid of the transpiration stream
 - e) Make up entirely of vascular sap from nonvascular cells

8. Which structure of compartments is not part of the plant's apoplast?
 - a) The lumen of a xylem vessel
 - b) The lumen of a sieve tube
 - c) The cell wall of a mesophyll cell

- d) The cell wall of a transfer cell
 - e) The cell wall of a root hair
9. Which of the following is not an adaptation that enhances the uptake of water and minerals by roots?
- a) Mycorrhizae the symbiotic associations of roots and fungi
 - b) Root hairs which increase surface area near root tips
 - c) Selective uptake of minerals by xylem vessels
 - d) Selective uptake of minerals by cortical cells
 - e) Plasmodesmata which facilitate symplastic transport from root hairs to the endodermis
10. A plant cell with a solute potential of -0.65 MPa maintains a constant volume when bathed in a solution that has a solute potential of -0.3 MPa and is in an open container. What do we know about the cell
- a) The cell has a pressure potential of 0.65 MPa
 - b) The cell has a water potential of -0.65 MPa
 - c) The cell has a pressure potential of 0.35 MPa
 - d) The cell has a pressure potential of 0.3 MPa
 - e) The cell has a water potential of 0 MPa
11. Ferns
- a) Have a vascular gametophyte
 - b) Have true roots
 - c) Produce seeds
 - d) Have fronds that bear sori
 - e) A,d
 - f) B,c,d
 - g) A,b,c
 - h) C,d

12. The lymphatic system empties into
- a) The arterial side of the circulatory system
 - b) The venous side of the circulatory system
 - c) The renal artery
 - d) The renal vein
13. The function of air sacs in an avian respiratory system
- a) Gas exchange
 - b) Ventilation
 - c) Tidal respiration
 - d) One way air flow system
14. Which of the following is not a function of the mammalian kidney
- a) Filtration of blood
 - b) Secretion of nitrogenous wastes
 - c) Production of urea and uric acid
 - d) Maintain proper water balance
15. Which of the following excretory organs empties in to the gut
- a) Nephridia
 - b) Protonephridia
 - c) Contractile vacuohole
 - d) Malphigian tubules
 - e) A,b
 - f) C,d
 - g) A,c

16. A person accidentally inhales an acetylcholine esterase inhibitor

- a) The person will die of respiratory muscle paralysis
- b) The person will suffer from skeletal muscle paralysis
- c) The person will die of continues convulsions
- d) Continues excitation of myocardial muscle

17. The movement of water in the xylem is not affected by

- a) Adhesion- cohesion of water molecules
- b) Negative pressure in the xylem
- c) Transpirational pull
- d) Gravity
- e) Energy availability

18. Movement of sap in the phloem

- a) Requires energy
- b) Occurs from sink to source
- c) Energy is required for loading and unloading
- d) Is called translocation
- e) Occurs only in angiosperms
- f) A,b,c
- g) B,c,d
- h) C,d,e

19. Guttation

- a) Loss of water vapor
- b) Requires root pressure
- c) Requires transpirational pull
- d) Decreases with an increase in surrounding humidity

- e) Increases with increase in water content of soil
- f) Is common in the soil type : sand
- g) Is common in the soil type : clay
- h) A,b,c,d
- i) C,d,e,f
- j) B,e,f

20. Which of the following hormones have an antagonistic relationship

- a) Brassinosteroids-oligosaccharins
- b) Absissic acid-gibberellins
- c) Absissic acid-cytokinin
- d) Cytokinin-ethylene
- e) Ethylene- CO₂

21. Amphibian lungs

- a) Have a high surface area
- b) Contain alveoli
- c) Guarded by a sphincter known as the glottis
- d) Guarded by the larynx
- e) A,b,d
- f) A,b,c

22. The chemical messengers the induce the feeling of satiety

- a) Gherlin
- b) Nueropeptide Y
- c) CCK

- d) Secretin
- e) Insulin
- f) Glucagon
- g) C,e
- h) C,f
- i) A,b,c

23. Which of the following is correctly matched

- a) Annelids-open circulatory system
- b) Arthropods-closed circulatory system
- c) Physalia- jet propulsion
- d) Aves- two way air flow system
- e) Grasshopper- tidal respiration

24. If a muscle cell is placed in a medium containing Ca^{2+} without ATP

- a) Muscle contraction continuously occurs
- b) Myosin heads can attach to actin
- c) Myosin cannot release actin
- d) Muscle stiffness
- e) A,b,c
- f) B,c,d

25. Rodents/rabbits are involved in coprophagy because

- a) They have symbiotans in their stomach
- b) They have an enlarged cecum occupied by symbiotants
- c) Digestion by symbiotants occurs after bypassing the intestine
- d) A,b,c

e) B,c

f) A,c

26. Rank the following respiratory organs in order of increasing oxygen uptake efficiency

a) Lungs-parabronchi-gills

b) Gills-parabronchi-lungs

c) Parabronchi-lungs-gills

d) Parabronchi-gills-lungs

27. In a concurrent exchange mechanism blood of oxygen pressure of 2 mPa and concentration of 0.31 mol/l faces water flow of oxygen pressure of 3 mPa and concentration 0.29 mol/l

a) Oxygen will flow from water to blood

b) Oxygen will flow from blood to water

c) An equilibrium will directly be reached and oxygen uptake cannot exceed 50 %

d) Oxygen will flow in both directions

28. A hormone that stimulates absorption of sodium by the kidneys and so regulates water and salt balance

a) Aldosterone

b) Atrial natriatic hormone

c) Anti diuretic hormone

d) A,c

29. Hormone/s that is/are released as a result of fat in the chime

a) CCK

b) Secretin

c) GIP

d) Gherlin

- e) Insulin
- f) Glucagon
- g) A,b,c
- h) A,c
- i) B,c
- j) E,d

30. Sensory receptors that are found in subcutaneous tissue

- a) Merkel's cell
- b) Ruffini endings
- c) Naked dendritic endings
- d) Pacinian corpuscles
- e) Warm receptors
- f) Cold receptors
- g) Free nerve endings