

Biology 251
September 2009
PRACTICE Exam One

1. Which of the following statements about cells is true?
 - a) Cells make energy
 - b) Cells eliminate wastes
 - c) Specialized cell function is usually a modification of a basic cell function
 - d) Some, but not all, cells can reproduce
 - e) All the above are true
2. Cells specialized for the exchange of material with the environment form which type of primary tissue?
 - a) muscle tissue
 - b) nervous tissue
 - c) epithelial tissue
 - d) connective tissue
 - e) none of the above
3. "Two or more primary tissues organized to perform a specific function" is the best definition of
 - a) cells
 - b) tissues
 - c) organs
 - d) body systems
 - e) organisms
4. Between two which fluid compartments is exchange of water and ions virtually unrestricted?
 - a) intracellular fluid and interstitial fluid
 - b) intracellular fluid and blood
 - c) intracellular fluid and plasma
 - d) interstitial fluid and plasma
 - e) a, b and c are all true
5. Mitochondria
 - a) Are the places where proteins are produced
 - b) Package proteins into their final form
 - c) Are the places where oxidative phosphorylation occurs
 - d) Are the places where glycolysis occurs
 - e) Both c and d are true
6. The cytosol is
 - a) a selectively permeable mechanical barrier that encloses a cell
 - b) a distinct membrane bound sphere that contains DNA
 - c) one continuous organelle
 - d) a semiliquid mass laced with an elaborate protein network
 - e) an internal scaffolding that supports the cell membrane

7. _____ maintain the asymmetrical cell shape of axons, and help transport secretory vesicles.
- microtubules
 - microfilaments
 - intermediate filaments
 - microtrabecular lattice
 - mitochondria
8. The energy from glucose metabolized in the presence of oxygen
- is converted to ATP by the citric acid cycle and oxidative phosphorylation only
 - is converted to ATP by glycolysis only
 - is converted to ATP by the citric acid cycle only
 - is converted to ATP by glycolysis and oxidative phosphorylation only
 - is converted to ATP by glycolysis, the citric acid cycle, and oxidative phosphorylation
9. The significance of fatty acid tails of phospholipids forming the interior of a membrane is that they
- Prevent hydrophilic molecules from crossing the membrane
 - Prevent lipophilic molecules from crossing the membrane
 - Prevent charged molecules from crossing the membrane
 - Prevent the Philadelphia Eagles from winning the Super Bowl
 - Both a and c are true
10. Which of the following components of the plasma membrane form ion channels?
- membrane proteins that span the membrane
 - cholesterol
 - phospholipids
 - membrane proteins located on outer surface of membrane
 - carbohydrates
11. Which of the following statements about carrier mediated transport is NOT true?
- no energy is required for facilitated diffusion
 - active transport requires energy
 - active transport can move molecules against a concentration gradient
 - facilitated diffusion can move molecules against a concentration gradient
 - both c and d are false
12. Which of the following best represents the distributions of ions in the ECF and ICF?
- Na^+ high in ICF, K^+ high in ECF, A^- high in ICF
 - Na^+ high in ECF, K^+ high in ICF, A^- high in ECF
 - Na^+ high in ECF, K^+ high in ICF, A^- high in ICF
 - Na^+ high in ICF, K^+ high in ECF, A^- high in ECF
 - Na^+ high in ICF, K^+ high in ICF, A^- high in ICF
13. In a neuron with a resting membrane potential of -70 mV:
- Na^+ passively leaks in, K^+ passively leaks out, and the Na^+-K^+ -ATPase pump balances the passive leaking of ions
 - Na^+ passively leaks out, K^+ passively leaks in, and the Na^+-K^+ -ATPase pump balances the passive leaking of ions
 - Na^+ passively leaks in, K^+ passively leaks out, and the Na^+-K^+ -ATPase pump contributes nothing
 - Na^+ passively leaks out, K^+ passively leaks in, and the Na^+-K^+ -ATPase pump contributes nothing
 - no ion leaks or pumps are operating at all when a membrane is at resting potential

14. The sequence of ion movements across the membrane of a neuron during an action potential is
- K^+ rushing into cell causes rising phase, then Na^+ rushing out causes falling phase
 - Na^+ rushing into cell causes rising phase, then K^+ rushing out causes falling phase
 - Na^+ rushing into cell causes rising phase, then Cl^- rushing out causes falling phase
 - Cl^- rushing into cell causes rising phase, then Na^+ rushing out causes falling phase
 - A^- rushing into cell causes rising phase, then K^+ rushing out causes falling phase
15. Mylenation of a neuron
- Increases the speed at which the Na^+-K^+ -ATPase pump acts
 - Decreases the threshold level required for all Na^+ channels to open
 - Increases conduction speed of an action potential
 - Both a and c are true
 - Both b and c are true
16. When an action potential reaches the axon terminal of a presynaptic neuron, it causes Ca^{++} channels to open so that Ca^{++} _____ the cell by _____;
- enters; active transport
 - enters; passive diffusion
 - enters; osmosis
 - exits; active transport
 - exits; passive diffusion
17. _____ causes the release of _____ through exocytosis, which, when binding to receptors on the postsynaptic membrane at an inhibitory synapse causes _____.
- neurotransmitter; the membrane to depolarize a little
 - neurotransmitter; the membrane to hyperpolarize a little
 - Na^+ ; the membrane to depolarize a little
 - Na^+ ; the membrane to hyperpolarize a little
 - K^+ ; the membrane to hyperpolarize a little
18. The All or None Law of action potentials states that
- refractory periods will occur
 - action potentials will jump from one Node of Ranvier to the next
 - once an action potential begins, it will be conducted the entire length of the neuron
 - both a and b
 - both a and c
19. The influx of sodium ions across the postsynaptic membrane at a synapse is a clear indication that a(n) _____ postsynaptic potential has been generated.
- depolarizing
 - hyperpolarizing
 - inhibitory
 - excitatory
 - both a and d are true
20. Simultaneous firings of several excitatory presynaptic neurons causes
- spatial summation
 - temporal summation
 - inhibition
 - both a and c
 - all of the above