

Biology 251
September 2009
PRACTICE Exam One

Bold = 2 pt answer *Italics* = 1/2 pt answer

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

7. _____ maintain the asymmetrical cell shape of axons, and help transport secretory vesicles.
- micotubules**
 - microfilaments
 - intermediate filaments
 - microtrabicular 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. which 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