

Formative exam (Nerves & Muscles)

1. How are phospholipid molecules arranged within the lipid bilayer of the plasma membrane? (ECF=extracellular fluid; ICF=intracellular fluid)

- A. Phospholipid molecules are arranged randomly.
- B. The polar lipid tails are oriented toward the ECF and the ICF because they are hydrophobic.
- C.** The polar phosphate heads are oriented toward the ECF and ICF because they are hydrophilic.
- D. The nonpolar lipid tails are oriented toward the ECF and the ICF because they are hydrophobic.
- E. The nonpolar phosphate heads are oriented toward the ECF and ICF because they are hydrophobic.

2. Which of the following is NOT a function of plasma membrane proteins?

- A.** Determine the fluidity of the membrane
- B. Serve as channels
- C. Serve as carriers
- D. Serve as membrane-bound enzymes
- E. Serve as receptor sites

3. The plasma membrane presents a (n) barrier to free diffusion.

- A. Hydrophilic
- B. Impermeable
- C.** Hydrophobic
- D. Water-soluble
- E. None of the above

4. Which of the following does NOT traverse the plasma membrane by simple diffusion?

- A. Urea
- B. O₂
- C.** Amino acids
- D. CO₂
- E. None of the above

5. Which of the following is NOT a characteristic of facilitated diffusion?

- A. Movement of solute down concentration gradient
- B. Specificity
- C.** ATP-requiring
- D. Can be saturated
- E. Involves a plasma membrane carrier

6. The plasma membrane of a resting neuron is more permeable to potassium ions than to sodium ions because the membrane has:

- A. More voltage-gated sodium ion channels
- B. More ligand-gated potassium ion channels
- C. More potassium leakage channels**
- D. Fewer voltage-gated sodium ion channels
- E. More carrier molecules for potassium ions

7. Osmosis is a special case of diffusion in which:

- A. a solute moves against its concentration gradient.
- B. water moves down its concentration gradient.
- C. water is moving against its concentration gradient.
- D. water is moving from an area of low solute concentration to an area of high solute concentration
- E. B) and D)**

8. The period after an initial stimulus when a neuron is not sensitive to another stimulus is the _____.

- A. absolute refractory period**
- B. repolarization
- C. resting period
- D. depolarization

9. When ions move through opened channels during the depolarization and repolarization phases of an action potential, they are moving by:

- A. primary active transport
- B. secondary active transport
- C. endocytosis
- D. filtration
- E. none of the above**

10. EPSPs:

- A. are nerve impulses that jump from node to node
- B. allows activity of neurons to be synchronized
- C. induce membrane hyperpolarization
- D. are graded, local depolarizations**
- E. are the slowest step of neurotransmission

11. The region of the neuron where the action potential is first generated is called the:

- A. soma
- B. Nissl body
- C. dendrite
- D. axon hillock**
- E. node of Ranvier

12. Which of the following statements is true about the action potential?

- A. Its amplitude would increase if the intensity of the stimulus increased.
- B. Its amplitude would increase if the extracellular concentration of Na^+ ions decreased.
- C. Its amplitude is greater for large caliber axons than for small axons.
- D.** The duration of its absolute refractory period would increase if the cell was exposed to toxins that block the voltage-dependent K^+ channels.
- E. The excitability of the cell would increase if it was exposed to toxins that block the voltage-dependent Na^+ channels.

13. The mechanism of contraction in smooth muscle parallels that of skeletal muscle in the following ways:

- A. Actin and myosin interact by the sliding filament mechanism.
- B. The trigger for contraction is a rise in intracellular calcium.
- C. ATP energizes the sliding process.
- D.** All of the above are correct.

Answers:

1 C

2 A

3 C

4 C

5 C

6 C

7 E

8 A

9 E

10 D

11 D

12 D

13 D