MULTIPLE CHOICE QUESTIONS. Each of the following numbered questions or incomplete statements is followed by suggested lettered answers or completions. Select the ONE which is BEST in each case, and mark its letter on the answer sheet next to the appropriate question number.

We'll post the answer key on the Medical Physiology e-bulletin board, right after the quiz.

Post challenges to quiz questions on the Medical Physiology e-bulletin board.


YOU MAY KEEP THESE QUESTIONS; hand in your scantron only.

Questions, Comments:

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6. Which of the following is true about the inactivation of voltage-sensitive Na⁺ channels during a nerve action potential?

A. Inactivation precedes activation.
B. Inactivation causes membrane depolarization.
C. Inactivation cannot occur until the repolarization phase of the AP is complete.
D. Inactivation is triggered by membrane depolarization, but occurs more slowly than activation.
E. Inactivation prevents membrane repolarization.

7. An example of a secondary active transporter is:

A. The voltage-gated Na channel.
B. The Na⁺, K⁺-ATPase.
C. The Na/HCO₃⁻ co-transporter.
D. The Na leak channel.
E. None of the above.

8. Consider an artificial cell where Na⁺ concentration inside the cell is 10-fold higher than outside. In the same cell, K⁺ concentration is 10-fold higher outside than inside. The cell membrane is equally permeable to K⁺ and Na⁺. What is the resting membrane potential of this cell?

A. +60 mV
B. 0 mV
C. -60 mV
D. 120 mV
E. -120 mV

9. A solution of 62.5 mM AlCl₃ and 50 mM Urea is:

A. Hyperosmotic and hypertonic.
B. Hyperosmotic but isotonic.
C. Iso-osmotic and hypotonic.
D. Hyperosmotic but hypotonic.
E. None of the above.

10. A nerve cell is bathed in a solution of TTX. The nerve cell is impaled with a microelectrode. Current is injected into the cell through the electrode to rapidly depolarize V_m from its resting value to 0 mV and held (clamped) at this voltage. Which one among the following FOUR choices best describes the response of K⁺ conductance (g_K) under these conditions?

A. K⁺ conductance will remain at zero.
B. K⁺ conductance will transiently increase then decrease.
C. K⁺ conductance will increase to a plateau and remain at that level.
D. K⁺ conductance will continuously rise as long as the cell is voltage clamped.