Name _____

Per _____ Date _____

ADAM Interactive Physiology: Nervous I: Membrane Potential

The following questions can be answered by viewing the pages listed, however you need to view all of the pages of the presentation to understand what is being explained.

1. (Page 3.) Which of these ions have a high concentration outside the cell and which have a high concentration inside the cell? Na^+, K^+, Cl^-

2. (Page 4.) What is the only way that ions can get across the cell membrane?

3. (Page 4.) What does it mean to say that cells exhibit selective permeability with respect to ions.

4. (Page 4.) How do neurons differ from most of the other cells in the body with respect to ion permeability?

5. (Page 6.) What mechanism used by the nervous system to produce rapid changes in membrane permeability?

6. (Page 7.) What major factor causes ions to move through ion channels?

7. (Page 7.) What type of force is the concentration gradient?

8. (Page 8.) How does the cell membrane become more positive outside and more negative inside?

9. (Page 9.) As potassium diffuses out of a cell, the outside of the cell becomes more _____ and the inside of the cell becomes more _____. Since opposite charges attract each other, and potassium is positive, the potassium will _____.

10. (Page 9.) The force that is responsible for the movement of positive potassium ions back into the cell, where it is more negative is called the _____.

11. (Page 9.) When is there no net movement of K^+ across a membrane?

12. (Page 9.) When there is no net movement, does that mean that ions are not moving across the membrane?

13. (Page 10.) What is a membrane potential?

14. (Page 12.) What does the term "resting membrane potential" in a neuron mean. What is a typical value for the resting membrane potential.

15. (Page 15.) What compensates for the leakage of sodium and potassium ions?

16. (Page 15.) Does the sodium-potassium pump move sodium and potassium with or against their gradients?

17. (Page 15.) What provides the energy to pump sodium and potassium against their gradients?

18. (Page 15.) The sodium-potassium pump pumps out _____ sodiums for every _____ potassiums that are pumped in.

19. (Page 15.) How does the sodium-potassium pump keep the resting membrane potential at -70 millivolts.

20. (Page 15.) The sodium-potassium pump _____.
    a. creates the membrane potential
    b. b. maintains the membrane potential