The Cardiovascular System: Cardiac Action Potential

1. How do the waves of depolarization, generated by the autorhythmic cells spread to the muscle cells? _____.
2. Depolarizing current from the autorhythmic cells causes the ventricular muscle cells to _____.
3. Name the 3 channels essential for generating an action potential and indicate which way the ions move (circle the correct one):

   a. _____ channels into or out of

   b. _____ channels into or out of

   c. _____ channels into or out of
4. If the sodium channel or the fast calcium channels are open, the inside of the cell would be relatively more _____.
5. The pacemaker potential is due to a/an (decreased or increased) efflux of ____ ions compared to a normal influx of ____ ions.
6. Threshold for the action potential in the SA Node is at ____ mV. What channels open, causing depolarization? _____
7. The reversal of membrane potential causes the _____ channels to open, causing the _____ of the membrane.
8. The _____ pumps sodium out and potassium into the cell, restoring ion concentrations to their resting levels.
9. Where is calcium stored in the contractile cells? _____
10. Gap junctions allow what cations to pass into the cardiac contractile cells, causing the opening of voltage-gated sodium channels? _____
11. State the voltage-gated channels responsible for the following stages of the action potential in cardiac contractile cells:

    a. Depolarization _____

    b. Plateau _____

c. Repolarization _____

12. What channels in the autorhythmic cells allow ions to leak in, producing a pacemaker potential? (Quiz section) _____

13. What channels in the autorhythmic cells bring about depolarization? _____.