Equilibrium Potential Worksheet

Instructions: Work through the Equilibrium Potential lab in section and answer the following questions. All plots must be hand drawn. Attach an additional sheet for drawing if you need more room. Feel free to use the links in the lab and ask IAs for assistance if you need help. The lab worksheets will be graded for completion and correctness.

1. Draw a plot comparing the equilibrium potential for potassium ($E_K$) vs. extracellular concentration of potassium ([K_o]). Then plot the $E_K$ vs. log([K_o]). What is the slope of line in the second plot and what does it correspond to?
2. Draw plot comparing the equilibrium potential for sodium ($E_{Na}$) and the extracellular concentration of sodium ($[Na_o]$). How does this plot compare to the previous problem’s first plot?

3. List the resting membrane potential values with the following conductance ratios with default ion concentrations:
   
   a. 1:1 ($g_{Na}:g_{K}$)
   b. 20:1 ($g_{Na}:g_{K}$)
   c. 1:30 ($g_{Na}:g_{K}$)
   d. 1:50 ($g_{Na}:g_{K}$)

4. Using a conductance ratio of 1:50 ($g_{Na}:g_{K}$), change the concentration of extracellular sodium to 75mM. How does this effect the resting membrane potential and why?

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**ACADEMIC INTEGRITY**

By taking this quiz, **you** agree that you will follow ALL UCSD ACADEMIC INTEGRITY policies.

It is YOUR responsibility to know and understand all of the policies. Failure to follow all UCSD Academic Integrity policies could result in expulsion from UCSD.

Your **signature below certifies** that you **will follow** and that you know that you will suffer the consequence for ANY academic integrity violation.

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**GRADING (IAs ONLY!)**

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**Note:** Worksheet will NOT be graded without signature at end of worksheet!