BME 315/253 HOMEWORK #2 Spring 08

Due: Thursday, February 7, 2008

1. 11.14
2. 11.15 b, c, d
3. 11.18
4. 11.20
5. We are given the following data for the giant squid axon.

Constant	Value
C ($\mu f/cm^2$)	1
$V_{r.p.}$ (mv)	60
E_K (mv)	-72
E_{Na} (mv)	55
E_l (mv)	-49.4
$\bar{g}_{Na}$ ($m.mho/cm^2$)	120
$\bar{g}_K$ ($m.mho/cm^2$)	36
g_l ($m.mho/cm^2$)	0.3

Using the circuit on page 49 of your class notes, compute the size of the current pulse (magnitude and pulse width) necessary to lower the membrane potential to V_o = *40 mv (or* V_m = *- 40 mV)*, and then return to resting potential. Neglect any change in the potassium and sodium conductances from resting potential in your calculations (include g_K and g_{Na} at resting potential when computing the current pulse), but include their conductance calculated at resting potential. *Show all work.*