$Na\ Channel:\ T = 22^\circ C$

$$\phi = 3.0^{(T-36.0)/10}$$
$$V' = V - (-50)$$
$$\alpha_m = \frac{0.32(13.0-V')}{e^{(13.0-V')/4.0}-1.0}$$
$$\beta_m = \frac{0.28(V'-40.0)}{e^{(V_-40.0)/5.0}-1.0}$$
$$\alpha_h = 0.128e^{(17.0-V')/18.0}$$
$$\beta_h = \frac{4.0}{e^{(40.0-V')/5.0}+1.0}$$

$$t_m = 1.0/((\alpha_m + \beta_m)\phi)$$
$$m_0 = \alpha_m/(\alpha_m + \beta_m)$$
$$t_h = 1.0/((\alpha_h + \beta_h)\phi)$$
$$h_0 = \alpha_h/(\alpha_h + \beta_h)$$

$$\frac{dm}{dt} = -\frac{1}{t_m}(m - m_0)$$
$$\frac{dh}{dt} = -\frac{1}{t_h}(h - h_0)$$

$K\ Channel:$

$$T = 22^\circ C$$
$$\phi = 3.0^{(T-36.0)/10}$$
$$V' = V - (-50)$$
$$\alpha_n = 0.02\frac{15.0-V'}{e^{(15.0-V')/5.0}-1.0}$$
$$\beta_n = 0.5e^{(10.0-V')/40.0}$$
$$t_n = 1.0/((\alpha_n + \beta_n)\phi)$$
$$n_0 = \alpha_n/(\alpha_n + \beta_n)$$
$$\frac{dn_k}{dt} = -\frac{1}{tn}(n_K - n_0)$$

$$I_L = g_L(V - E_L)$$
$$g_L = 0.15\ \mu S$$
$$E_L = -55\ mV$$

$$I_{Na} = g_{Na}m_{Na}^3 h_{Na}(V - E_{Na})$$
$$g_{Na} = 100\ \mu S$$
$$E_{Na} = 50\ mV$$

$$I_K = g_K n_K^4(V - E_K)$$
$$g_K = 10\ \mu S$$
$$E_K = -95\ mV$$