Quiz #10

Physics 221

Names: _____

1. If you have lots of 30 Ω and 70 Ω resistors, how could you build a circuit with an equivalent resistance of 36 Ω?

2. Consider a discharging capacitor that has a charge of 2.5×10^{-3} C after half a time constant when the supply is 20V.
    a. What is the maximum charge that can collect on a plate?
    b. If the resistance is 14.6 kΩ, what is the time constant?

$\Delta V = IR$ $\quad I = \Delta Q/\Delta t$ $\quad P = I\Delta V = (\Delta V)^2/R = I^2R$

$C=Q/\Delta V$ $\quad R_{eq} = R_1 + R_2 + R_3 + \ldots$ $\quad 1/R_{eq} = 1/R_1 + 1/R_2 + 1/R_3 + \ldots$

$q = Q\,(1-e^{-t/RC})$ $\quad q = Q\,e^{-t/RC}$ $\quad \tau = RC$