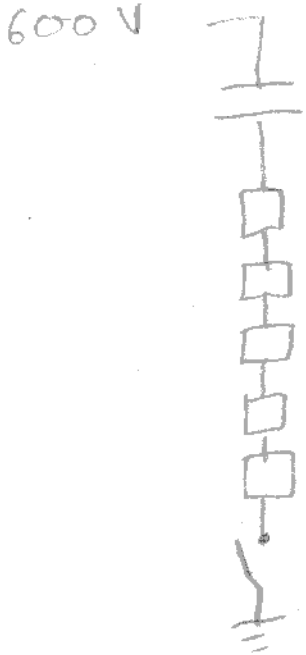

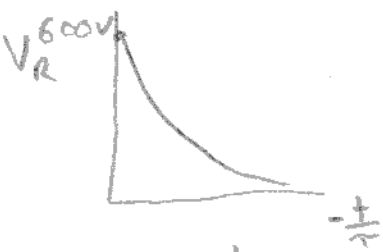

$$V = V_0 \cdot e^{-\frac{t}{\tau}}$$

$$P = \frac{V^2}{R}$$

$$\therefore P = \frac{(V_0 e^{-\frac{t}{\tau}})^2}{R}$$

$$P = \frac{V_0^2}{R} \cdot e^{-\frac{2t}{\tau}}$$

$$\therefore E = \frac{V_0^2}{R} \int_0^\infty e^{-\frac{2t}{\tau}}$$

$$= \left[\frac{V_0^2}{R} \cdot -\frac{\tau}{2} \cdot e^{-\frac{2t}{\tau}} \right]_0^\infty$$

$$= \left[-\frac{\tau V_0^2}{2R} \cdot e^{-\frac{2t}{\tau}} \right]_0^\infty$$

$\tau = RC$

$$\therefore \left[-\frac{C V_0^2}{2} \cdot e^{-\frac{2t}{RC}} \right]_0^\infty$$

$$-\frac{C V_0^2}{2} \cdot 0 - -\frac{C V_0^2}{2}$$

$$E = \frac{C V_0^2}{2}$$

Energy dissipated in resistor is the same as the energy stored in the capacitor, and independant of the resistor.

$$E = \frac{1 \times 10^{-6} \times 600^2}{2} = 0.18 \text{ J}$$