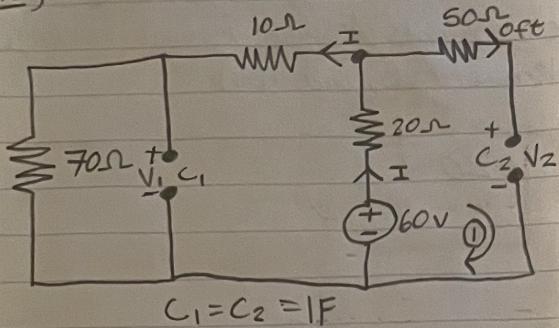


Homework #7-2

Problem 2)



$$\text{current: } I = \frac{60}{20+10+70} = 0.6\text{A}$$

$$\text{Voltage } (V_1) = (70\Omega)I = (70\Omega)(0.6) \\ V_1 = 42\text{V}$$

KVL Loop 1

$$60 - 20 \cdot I - V_2 = 0$$

$$V_2 = 60 - 20(0.6) = 48\text{V}$$

Energy stored in capacitor C_1 is:

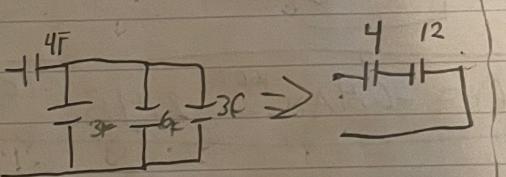
$$E_1 = \frac{1}{2} C_1 V_1^2 \Rightarrow \frac{1}{2} (1\text{F}) (42\text{V})^2 = 882\text{J}$$

Energy stored in capacitor C_2 is:

$$E_2 = \frac{1}{2} C_2 V_2^2 = \frac{1}{2} (1\text{F}) (48\text{V})^2 = 1152\text{J}$$

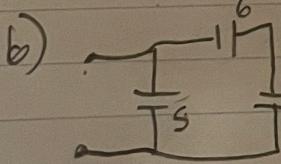
Problem 3)

a) $\frac{12 \cdot 4}{12+4} = 3\text{F}$

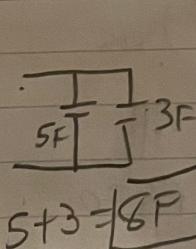


$$3+6+3 = 12\text{F}$$

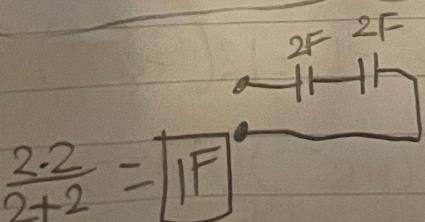
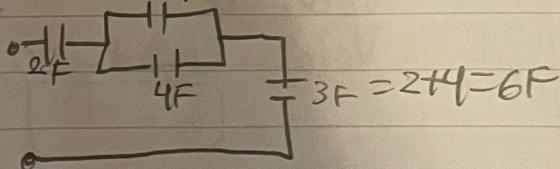
$$\frac{4 \cdot 12}{4+12} = [3\text{F}]$$



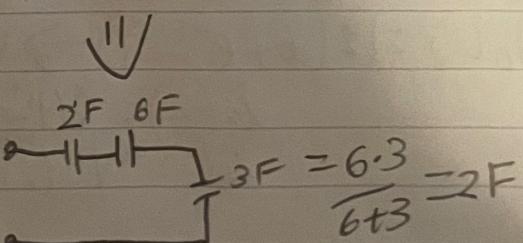
$$\frac{6 \cdot 6}{6+6} = 3\text{F}$$



b) $\frac{3 \cdot 6}{3+6} = 2\text{F}$



$$\frac{2 \cdot 2}{2+2} = [1\text{F}]$$



$$\frac{2 \cdot 6}{6+2} = 1.5\text{F}$$