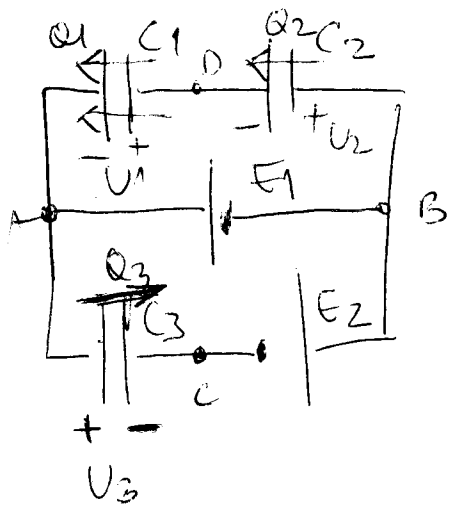


(\*)



$C_1 = 20\mu\text{F}$   
 $C_2 = 30\mu\text{F}$   
 $C_3 = 10\mu\text{F}$   
 $E_1 = 5\text{V}$     $E_2 = 10\text{V}$

$U_1 = ?$     $Q_1 = ?$   
 $U_2 = ?$     $Q_2 = ?$   
 $U_3 = ?$     $Q_3 = ?$   
 $W_1 = ?$   
 $W_2 = ?$   
 $W_3 = ?$

$$U_3 = U_3 = U_{AC} = U_{AB} + U_{BC} = +E_1 + E_2 = 15\text{V}$$

$$Q_3 = U_3 \cdot C_3 = 150\mu\text{C}$$

$$W_3 = \frac{1}{2} Q_3 U_3 = \frac{1}{2} 50 \cdot 10^{-9} \cdot 15 = 125\mu\text{J}$$

$$C_{12} = \frac{C_1 \cdot C_2}{C_1 + C_2} = \frac{20\mu\text{F} \cdot 30\mu\text{F}}{50\mu\text{F}} = \frac{600}{50}\mu\text{F} = 12\mu\text{F}$$

$$U_{12} = U_{BA} = -E_1 = -5\text{V}$$

$$Q_{12} = U_{12} \cdot C_{12} = -5 \cdot 12\mu\text{C} = -60\mu\text{C}$$

$$Q_1 = Q_2 = Q_{12} = -60\mu\text{C}$$

$$U_1 = \frac{Q_1}{C_1} = \frac{-60\mu\text{C}}{20\mu\text{F}} = -3\text{V}$$

$$U_2 = \frac{Q_2}{C_2} = \frac{-60\mu\text{C}}{30\mu\text{F}} = -2\text{V}$$

$$W_1 = \frac{1}{2} Q_1 U_1 = \frac{1}{2} (-60\mu\text{C}) \cdot (-3\text{V}) = 90\mu\text{J}$$

$$W_2 = \frac{1}{2} Q_2 U_2 = \frac{1}{2} (-60\mu\text{C}) \cdot (-2\text{V}) = 60\mu\text{J}$$