

### Physics 1214, Midterm II: solutions

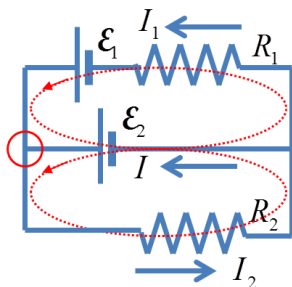
Answers to multiple choice questions: 1:0,G; 2:B; 3:C; 3:C.

$$\text{P1 } C = \frac{1}{\frac{1}{6} + \frac{1}{4+5} + \frac{1}{1+2+3}} = 2.25 \text{ nF}$$

$$\text{P2 } \mathcal{E}_2 = I_2 R_2 \quad I_2 = 5/10 = 0.5 \text{ A}$$

$$\mathcal{E}_1 - \mathcal{E}_2 = I_1 R_1 \quad I_1 = (10 - 5)/50 = 0.1 \text{ A}$$

$$I + I_1 = I_2 \quad I = I_2 - I_1 = 0.4 \text{ A}$$



$$\text{P3 } \mathcal{E} = I R e^{t/RC} = 9.86 \text{ V}$$

$$\text{P4 } B = \frac{\mathcal{E}}{lv} = 10 \text{ T}$$