

CIRCUITS DAY 16: REVIEW & FRQ WORKSHOP

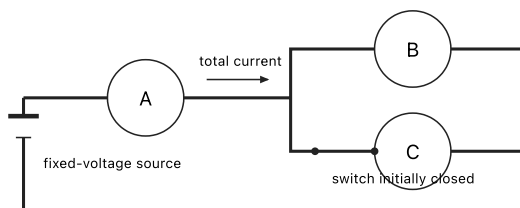
CED 11.1–11.8 · Skill 3.C · FRQ: QQT

MIXED RETRIEVAL — 5 MINUTES

1. In one series loop, current before and after a resistor is: **same / smaller after**.
2. Adding a parallel resistor makes total resistance: **larger / smaller**.
3. Around a closed loop, $\sum \Delta V$ is: **0 / $\mathcal{E}$** .
4. At one τ , charging V_C is about: **37% / 63% / 100%** of final.

FRQ WORKSHOP: COMMIT BEFORE CALCULATING

THREE IDENTICAL OHMIC BULBS; SWITCH INITIALLY CLOSED



Bulb A is in series with the parallel pair B and C. The ideal source maintains fixed voltage.

NOTES / REASONING

QQT: RANK AND JUSTIFY

(a) With the switch closed, rank the brightness of A, B, and C. Justify using current, voltage, or power.

(b) The switch is opened. Rank the final brightness of A, B, and C.

(c) Compare A before and after opening; compare B before and after. State brighter, dimmer, or unchanged and justify.

REPRESENTATION TRANSLATION

For closed-switch identical resistance R , write:

1. one equivalent-resistance expression;
2. the source-current expression;
3. one junction equation;
4. one loop equation through A and B.

Use $\mathcal{E}=15\text{ V}$ and $R=30\ \Omega$ to calculate source current and the power of each bulb with the switch closed.

Open the switch and repeat for A and B.

MIXED RAPID SET

1. A real 12 V battery with $r=1.0\ \Omega$ supplies 2.0 A. Find terminal voltage.

2. A $6\ \mu\text{F}$ and $3\ \mu\text{F}$ pair is in series. Find C_{eq} .

3. 0.80 A and 0.35 A enter a junction. Find the outgoing current.

4. $R=22\ \text{k}\Omega$ and $C=330\ \mu\text{F}$. Find τ .

Reflection: identify one model or representation you will sketch first on the assessment.