

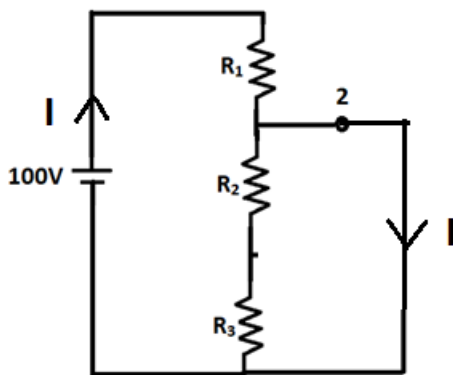
Unit I: Assessment: Q & A (Selected)

Lecture 4

1. In the circuit shown, current in the network is 50 A & 70 A when the switch is in position 1 and 2 respectively and 25 A with switch open. Find the value of resistors.

SOLUTION:

With Switch in position 2, circuit gets reduced as shown below:



Here R_2 and R_3 are in series. Across this series combination, there is a short circuit. Hence, current from 100V source flows through R_1 and short circuit path.

$$\text{Therefore, current, } I = \frac{100V}{R_1} = 70A \text{ (given)}$$

$$\text{Hence, } R_1 = 1.43\Omega$$

Similarly, when switch is in position 1, current flows through R_1 & R_2 only.

$$\text{Therefore, current in this case} = \frac{100V}{R_1 + R_2} = 50A \text{ (given)}$$

$$\text{Hence, } R_2 = 0.57\Omega$$

Similarly, when switch is open, current flows through R_1 , R_2 & R_3

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Therefore, current in this case = $\frac{100V}{R_1+R_2+R_3} = 25A$ (given)

Hence, $R_3 = 2\Omega$