

Attribution Nidhal Abdulaziz

Tutorial 5 in class question 1

Handwritten calculations and circuit diagrams for finding the voltage V_2 across a $6.8k\Omega$ resistor.

Calculations:

$$V_2' = 36V \times \frac{6.8}{12 + 6.8}$$
$$V_2' = 13V$$
$$I_2 = 9mA \times \frac{12}{12 + 6.8} = 5.75mA$$
$$V_2'' = 5.75mA \times 6.8k\Omega$$
$$V_2'' = 39V$$
$$V_{2 \text{ total}} = V_2' + V_2''$$
$$V_2 = 13.02 + 39$$
$$V_2 \approx 52V$$

Circuit Diagrams:

- Top Right:** A simplified circuit showing a $6.8k\Omega$ resistor in series with a $9mA$ current source. The voltage across the resistor is labeled V_2 .
- Middle:** A circuit with a $36V$ DC source, a $12k\Omega$ resistor, and a $6.8k\Omega$ resistor. A $9mA$ current source is connected in parallel with the $6.8k\Omega$ resistor. The voltage across the $6.8k\Omega$ resistor is labeled V_2 .
- Bottom Middle:** A circuit with a $36V$ DC source, a $12k\Omega$ resistor, and a $6.8k\Omega$ resistor. The output terminals are open-circuited (o/c). The voltage across the $6.8k\Omega$ resistor is labeled V_2 .
- Bottom Right:** A circuit with a $12k\Omega$ resistor, a $6.8k\Omega$ resistor, and a $9mA$ current source. The voltage across the $6.8k\Omega$ resistor is labeled V_2'' and the current through it is labeled I_2 .