

# 22 Lecture - PHY301

## Important Subjective

**What is source transformation?**

**Answer:** Source transformation is a technique used in circuit theory to replace a voltage source with an equivalent current source or vice versa while maintaining the same behavior of the original circuit.

**What is the purpose of source transformation?**

**Answer:** The purpose of source transformation is to simplify circuits and to make analysis easier.

**When is source transformation particularly useful?**

**Answer:** Source transformation is particularly useful in situations where a circuit contains both voltage sources and current sources, and it is desired to convert them into a single type of source.

**How do you transform a voltage source into an equivalent current source?**

**Answer:** To transform a voltage source into an equivalent current source, we divide the voltage by the resistance to get the current. This current value is then used to create an equivalent current source with the same resistance as the original voltage source.

**How do you transform a current source into an equivalent voltage source?**

**Answer:** To transform a current source into an equivalent voltage source, we multiply the current by the resistance to get the voltage. This voltage value is then used to create an equivalent voltage source with the same resistance as the original current source.

**What is the equation for calculating the current through a voltage source?**

**Answer:** The equation for calculating the current through a voltage source is  $I = V/R$ , where  $I$  is the current,  $V$  is the voltage, and  $R$  is the resistance.

**What is the equation for calculating the voltage drop across a resistance?**

**Answer:** The equation for calculating the voltage drop across a resistance is  $V = I \cdot R$ , where  $V$  is the voltage,  $I$  is the current, and  $R$  is the resistance.

**What is the equivalent current source for a voltage source with 10V and 5 $\Omega$  resistance?**

**Answer:** The equivalent current source for a voltage source with 10V and 5 $\Omega$  resistance is a current source with 2A and 5 $\Omega$  resistance.

**What is the equivalent voltage source for a current source with 4A and 8 $\Omega$  resistance?**

**Answer:** The equivalent voltage source for a current source with 4A and 8 $\Omega$  resistance is a voltage source with 32V and 8 $\Omega$  resistance.

**What is the advantage of using source transformation in circuit analysis?**

**Answer:** The advantage of using source transformation in circuit analysis is that it simplifies the circuit and makes analysis easier by reducing the number of different types of sources in the circuit.