

6 Lecture - PHY301

Important Mcqs

What is Kirchhoff's Current Law?

- a) The sum of the voltages around a loop in a circuit is zero.
- b) The sum of the currents entering a node in a circuit is equal to the sum of the currents leaving the node.
- c) The voltage across a resistor is proportional to the current flowing through it.
- d) None of the above.

Answer: b) The sum of the currents entering a node in a circuit is equal to the sum of the currents leaving the node.

Kirchhoff's Current Law is based on the principle of:

- a) Conservation of energy
- b) Conservation of mass
- c) Conservation of charge
- d) Conservation of momentum

Answer: c) Conservation of charge

What is a node in an electrical circuit?

- a) A component that stores energy in an electric field
- b) A component that stores energy in a magnetic field
- c) A point where two or more components are connected together
- d) None of the above

Answer: c) A point where two or more components are connected together

KCL is often used in conjunction with:

- a) Ohm's Law
- b) Kirchhoff's Voltage Law

- c) Faraday's Law
- d) None of the above

Answer: b) Kirchhoff's Voltage Law

KCL can be used to determine:

- a) The voltage drop across a resistor
- b) The current flowing through a capacitor
- c) The current flowing in different branches of a circuit
- d) None of the above

Answer: c) The current flowing in different branches of a circuit

How can KCL be applied to circuit meshes?

- a) By summing the voltages around each mesh
- b) By summing the currents entering and leaving each mesh
- c) By summing the resistances in each mesh
- d) None of the above

Answer: b) By summing the currents entering and leaving each mesh

The equation for KCL is:

- a) $\sum V = 0$
- b) $\sum R = 0$
- c) $\sum I_{in} = \sum I_{out}$
- d) None of the above

Answer: c) $\sum I_{in} = \sum I_{out}$

KCL can be used to analyze circuits with:

- a) Resistors only
- b) Capacitors only
- c) Inductors only

d) Any combination of circuit elements

Answer: d) Any combination of circuit elements

What is the difference between a current source and a current sink?

a) A current source generates a constant current flow, while a current sink absorbs current.

b) A current source generates a constant voltage, while a current sink absorbs voltage.

c) A current source generates a varying current flow, while a current sink generates a constant current flow.

d) None of the above.

Answer: a) A current source generates a constant current flow, while a current sink absorbs current.

KCL can be used to solve problems involving:

a) Voltage sources only

b) Current sources only

c) Resistors only

d) Any combination of circuit elements

Answer: d) Any combination of circuit elements