9 Lecture - PHY301

Important Mcqs

What is a super node in circuit theory?

a) A node with a high voltage

b) A node with two or more voltage sources

c) A node with a voltage source and a current source

d) A combination of two nodes with different voltages

Answer: d) A combination of two nodes with different voltages

What is the purpose of creating a super node?

a) To simplify the circuit analysis process

b) To increase the power of the circuit

c) To reduce the overall resistance of the circuit

d) To decrease the capacitance of the circuit

Answer: a) To simplify the circuit analysis process

In a circuit, if there are two voltage sources connected to a super node, what is the voltage of the super node?

a) The sum of the voltages of the two voltage sources

b) The difference of the voltages of the two voltage sources

c) The average of the voltages of the two voltage sources

d) It cannot be determined without more information

Answer: d) It cannot be determined without more information

Can a current source be part of a super node?

a) Yes, but only if it is connected to a voltage source

b) No, a current source cannot be part of a super node

c) Yes, as long as it is not connected to any other current sources

d) Yes, it can be part of a super node regardless of other connections

Answer: d) Yes, it can be part of a super node regardless of other connections

What is the advantage of using a super node in circuit analysis?

a) It reduces the complexity of the circuit

b) It makes it easier to identify the voltage and current in a particular branch

c) It allows for the use of more voltage sources in a circuit

d) It decreases the overall resistance of the circuit

Answer: a) It reduces the complexity of the circuit

How is a super node represented in a circuit diagram?

a) As a dashed line connecting two nodes with different voltages

b) As a circle enclosing two or more nodes with different voltages

c) As a square enclosing two or more nodes with different voltages

d) As a triangle pointing towards the higher voltage node

Answer: b) As a circle enclosing two or more nodes with different voltages

When analyzing a circuit with a super node, how many equations are required for each super node?

a) One equation

b) Two equations

c) Three equations

d) It depends on the complexity of the circuit

Answer: a) One equation

In a circuit with two super nodes, how many equations are required for each super node?

a) One equation

b) Two equations

c) Three equations

d) It depends on the complexity of the circuit

Answer: a) One equation

When applying KCL to a super node, what is the equation used to find the voltage of the super node?

a) V = IR

b) V = IR + E

c) V = I/R

d) V = I(R1 + R2)

Answer: b) V = IR + E

Can a super node be created using two nodes with the same voltage?

a) Yes, as long as there is a voltage source between the two nodes

b) No, a super node requires nodes with different voltages

c) Yes, but it would not provide any advantage in circuit analysis

d) Yes, as long as there is a current source between the two nodes

Answer: c) Yes, but it would not provide any advantage in circuit analysis