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