10 Lecture - PHY301

Important Mcqs

What is the Super Node technique used for?

a) To simplify nodal analysis for circuits with voltage sources only

b) To simplify nodal analysis for circuits with current sources only

c) To simplify nodal analysis for circuits with both current and voltage sources

d) To calculate the power dissipated in a circuit

Answer: c) To simplify nodal analysis for circuits with both current and voltage sources

What is a super node in nodal analysis?

a) A node with only voltage sources connected to it

b) A node with only current sources connected to it

c) A group of two or more nodes that are analyzed together as one node

d) A node with a reference voltage of zero

Answer: c) A group of two or more nodes that are analyzed together as one node

What is the purpose of creating a super node?

a) To simplify the circuit for analysis

b) To add more complexity to the circuit

c) To make the circuit more difficult to analyze

d) To increase the voltage drop across a specific element

Answer: a) To simplify the circuit for analysis

How is the voltage across a super node determined in nodal analysis?

a) By applying Kirchhoff's voltage law (KVL)

b) By applying Ohm's law

c) By using the super node equation

d) By applying Kirchhoff's current law (KCL)

Answer: a) By applying Kirchhoff's voltage law (KVL)

In nodal analysis, what is the super node equation?

a) An equation that relates the voltage across a super node to the currents flowing into and out of the super node

b) An equation that relates the currents flowing into and out of a single node

c) An equation that relates the voltage across a single node to the currents flowing into and out of the node

d) An equation that relates the power dissipated by a specific element to the voltage and current across that element

Answer: a) An equation that relates the voltage across a super node to the currents flowing into and out of the super node

How many equations are needed to solve for the unknown voltages and currents in a circuit using nodal analysis with the super node technique?

a) One equation

b) Two equations

c) Three equations

d) Four equations

Answer: b) Two equations

What is the advantage of using the super node technique in nodal analysis?

a) It simplifies the circuit and reduces the number of equations needed to solve for the unknown variables

b) It makes the circuit more difficult to analyze

c) It increases the accuracy of the results obtained from nodal analysis

d) It allows for the use of Ohm's law to solve for the unknown variables

Answer: a) It simplifies the circuit and reduces the number of equations needed to solve for the unknown variables

What type of circuit elements can be included in a super node?

a) Only voltage sources

b) Only current sources

c) Both voltage and current sources

d) Only resistors

Answer: c) Both voltage and current sources

In nodal analysis with the super node technique, how are dependent voltage sources treated?

a) They are ignored

b) They are treated as independent sources

c) They are included in the super node equation

d) They are treated as resistors

Answer: c) They are included in the super node equation

When is the super node technique not applicable in nodal analysis?

a) When the circuit contains only voltage sources

b) When the circuit contains only current sources

c) When there are no nodes in the circuit