

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**