

# 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**