Nodal Analysis

- Nodal analysis provides a general procedure for analyzing circuits using node voltages as the circuit variables.

- Steps required for Nodal Analysis:

1. Select a node as the reference node. Assign voltages $v_1, v_2, \ldots, v_{n-1}$ to the remaining $(n - 1)$ nodes. The voltages are referenced with respect to the reference node.
2. Apply KCL to each of the $(n - 1)$ nonreference nodes. Use Ohm's law to express the branch currents in terms of node voltages.
3. Solve the resulting simultaneous equations to obtain the unknown node voltages.

Mesh Analysis

- Steps required for Mesh Analysis:

1. Assign mesh currents $i_1, i_2, \ldots, i_n$ to the n meshes.
2. Apply KVL to each of the n meshes. Use Ohm's law to express the voltages in terms of the mesh currents.
3. Solve the resulting n simultaneous equations to get the mesh currents.