**a) Maximum Power Transfer Theorem**

In electrical engineering, the maximum power transfer theorem states that, to obtain maximum external power from a source with a finite internal resistance, the resistance of the load must equal the resistance of the source as viewed from its output terminals.

Maximum Power Transfer occurs when the resistive value of the load is equal in value to that of the voltage sources internal resistance allowing maximum power to be supplied. Generally, this source resistance or even impedance if inductors or capacitors are involved is of a fixed value in Ohm´s.

**b) Millman’s Theorem**

The Millman's Theorem states that – when a number of voltage sources (V1, V2, V3……… ... In other words; it determines the voltage across the parallel branches of the circuit, which have more than one voltage sources, i.e., reduces the complexity of the electrical circuit.

**c) Super Node**

In [circuit theory](https://en.wikipedia.org/wiki/Circuit_theory), a supernode is a theoretical construct that can be used to solve a circuit. Each supernode contains two nodes, one non-reference node and another node that may be a second non-reference node or the reference node. Supernodes containing the reference node have one node voltage variable. For [nodal analysis](https://en.wikipedia.org/wiki/Nodal_analysis), the supernode construct is only required between two non-reference nodes.

**d) RMS value**

The RMS value is the effective value of a varying voltage or current. It is the equivalent steady DC (constant) value which gives the same effect. For example, a lamp connected to a 6V RMS AC supply will shine with the same brightness when connected to a steady 6V DC supply. RMS is a mathematical quantity (used in many *math* fields) used to compare both alternating and direct currents (or voltage). In other words (as an example), the RMS value of AC (current) is the direct current which when passed through a resistor for a given period of time *would* produce the same heat as that produced by alternating current when passed through the same resistor for the same time.

**e) Maximum Value**

The maximum value of a function is the place where a function reaches its highest point, or vertex, on a graph. For instance, in this image, the maximum value of the function is y equals 5. Practically, finding the maximum value of a function can be used to determine maximum profit or maximum area.

**f) Active and Passive elements**

Active and passive components form the two main types of electronic circuit elements. An active component supplies energy to an electric circuit, and hence has the ability to electrically control the flow of charge. A passive component can only receive energy, which it can either dissipate or absorb.