Introduction to DC Circuits

.1] Electrical Network

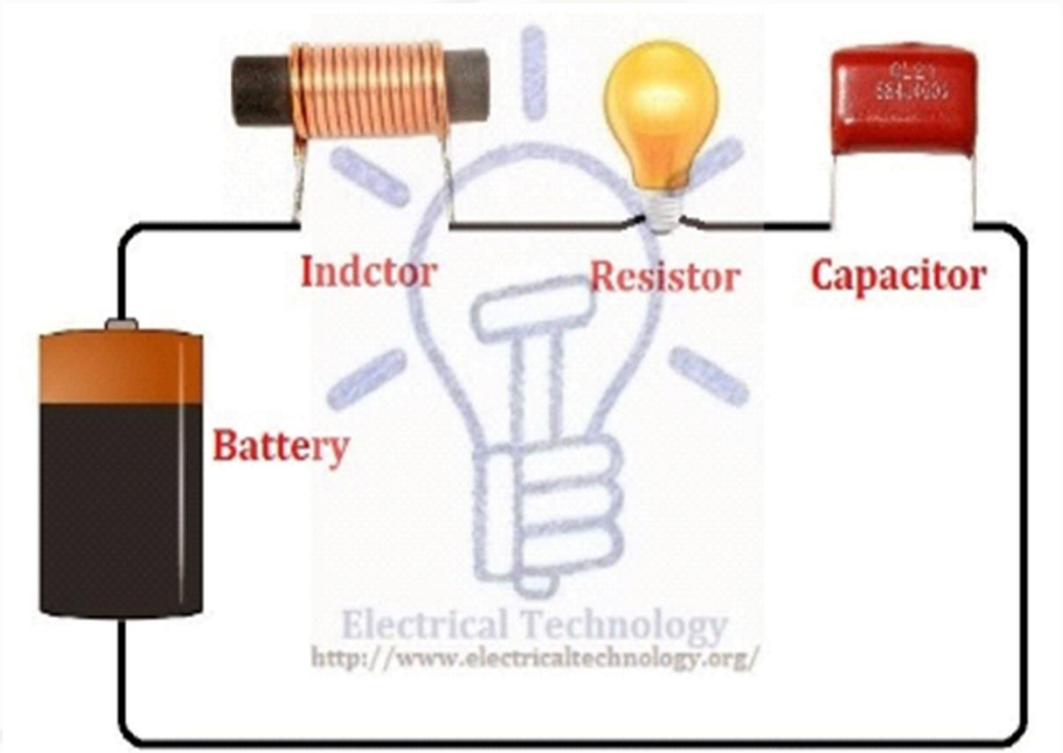
ombination of different electric elements or components which are connected in any way lled electric network.

.2] Complex Networks

Circuit which contains on many electrical elements such as resistors, capacitors, inducto rrent sources and Voltage source (both AC and DC) is called Complex network. These kinds etworks can't be solved easily by simple ohm's Law or Kirchhoff's laws. I.e. we solve the rcuits by specific technique i.e. Norton's Theorem, Thevenin's Theorem, Superposition theore c.

.3] Circuit or Electric Circuit

rcuit is a close loop path giving a return path for the current. Or a close conducting path hich current can flow is called circuit



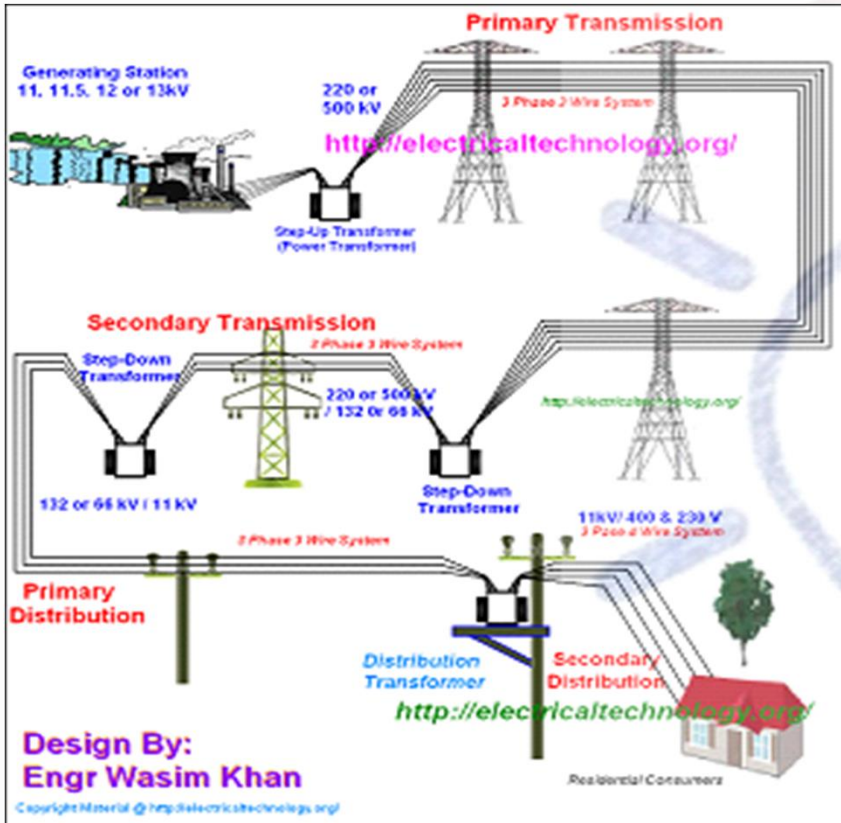
4] Unilateral and Bilateral circuits

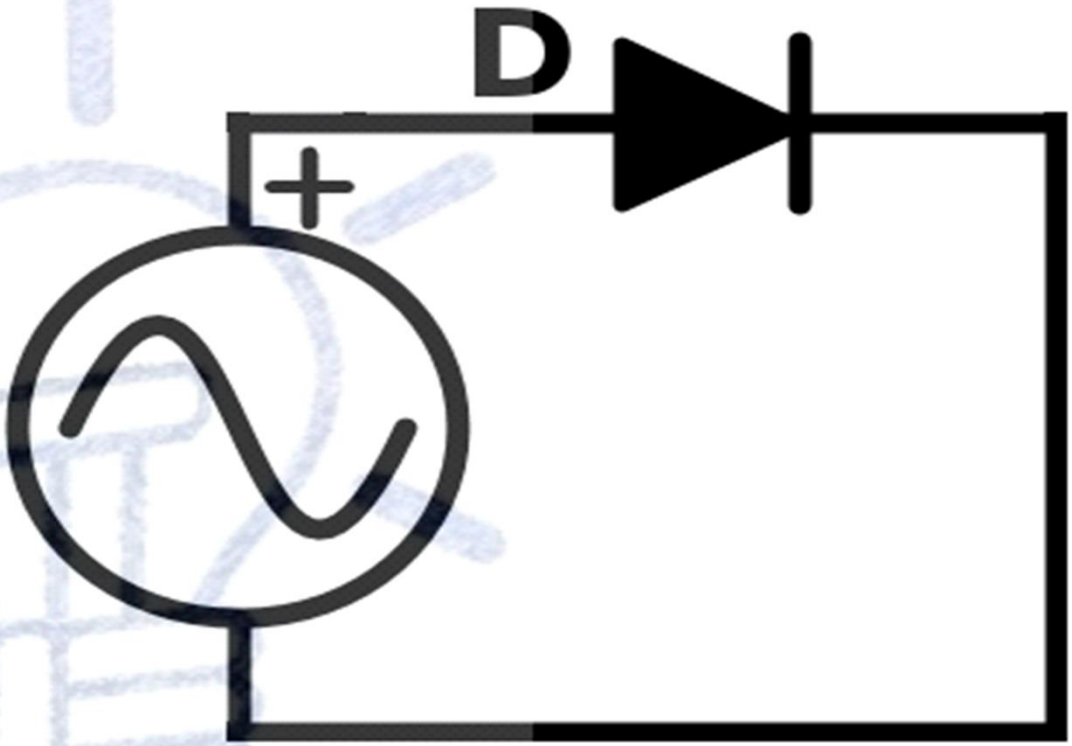
Unilateral circuits

unilateral circuits, the property of circuit changes with the change of direction of su
tage or current. In other words, unilateral circuit allows the current to flow only in
ection. Diode rectifier is the best example of unilateral circuit because it does not
form the rectification in both direction of supply.

Bi-lateral circuits

bilateral circuits, the property of circuit does not change with the change of directio
pply voltage or current. In other words, bilateral circuit allows the current to flow in
h directions. Transmission line is the best example of bilateral circuit because, if yo
e supply from any direction, the circuit properties remain constant





Bi-lateral circuits
(Transmission line)

Unilateral circuits
(Diode rectifier)

] Active and Passive Circuits:

Active Circuit

ircuit which contains one or more E.M.F (Electro motive force) sources is called ive Circuit

Passive Circuit

ircuit in which no EMF source exist is called Passive Circuit

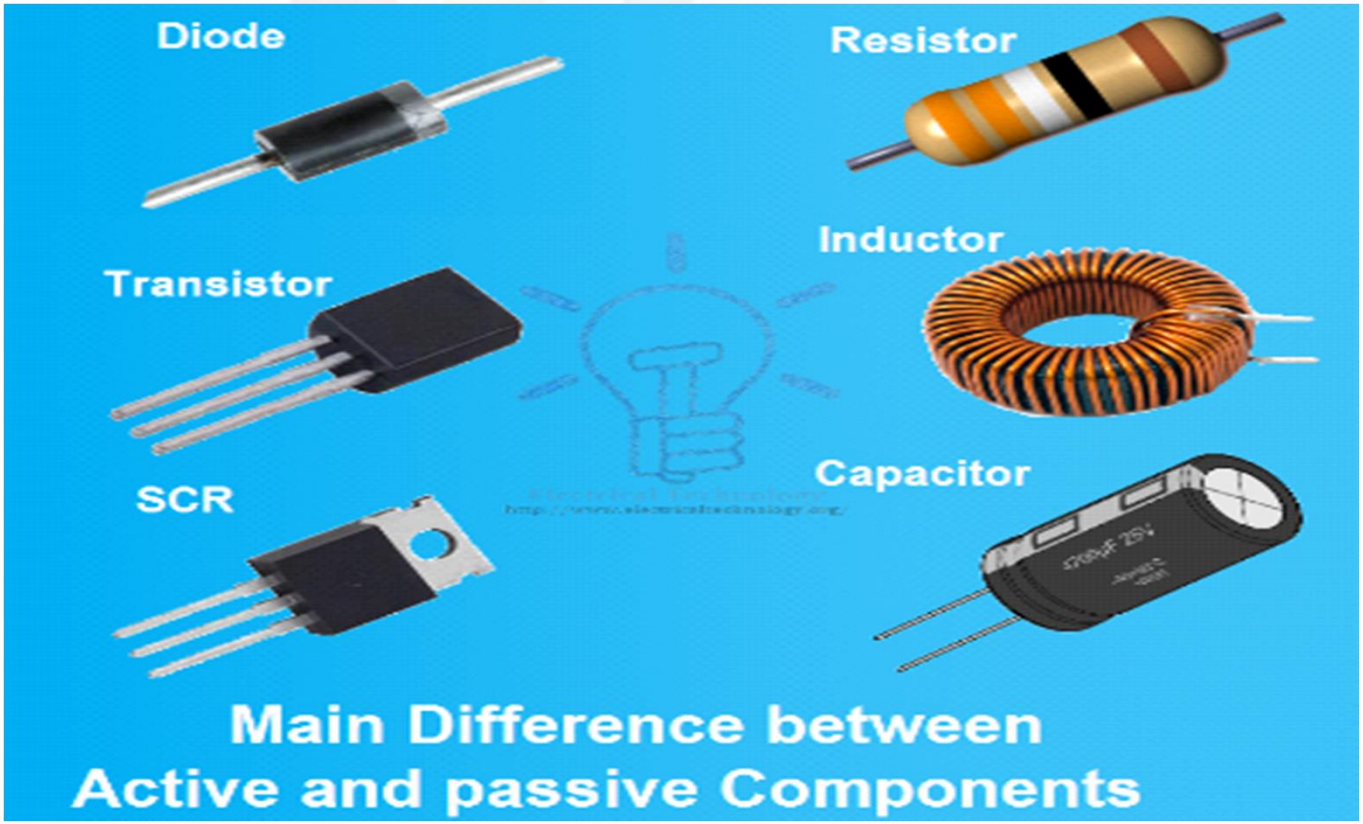
Main Difference between Active and Passive Components

Active Components:

Those devices or components which required external source for their operation is called Active Components.

For Example: Diode, Transistors, SCR etc…

nation: Diode is an Active Components as it requires an External Source to its operation. If we con in a Circuit and then connect this circuit to the Supply voltage., then Diode will not conduct the cu he supply voltage reaches to 0.3V (in case of Germanium) or 0.7V (in case of Silicon).



VIDEO- COMPONENTS

https://www.youtube.com/watch?v=iHmSj6v7LOE

Passive Components:

Those devices or components which do not required external source to their operation is ed Passive Components.

Example: Resistor, Capacitor, Inductor etc…

] Other important related terms to Electric Circuits and Networks

Node

oint or junction where two or more circuit's elements (resistor, capacitor, inductor etc) meet is ed Node

Branch

t part or section of circuit which locate between two junctions is called branch. In branch, one re elements can be connected and they have two terminals.

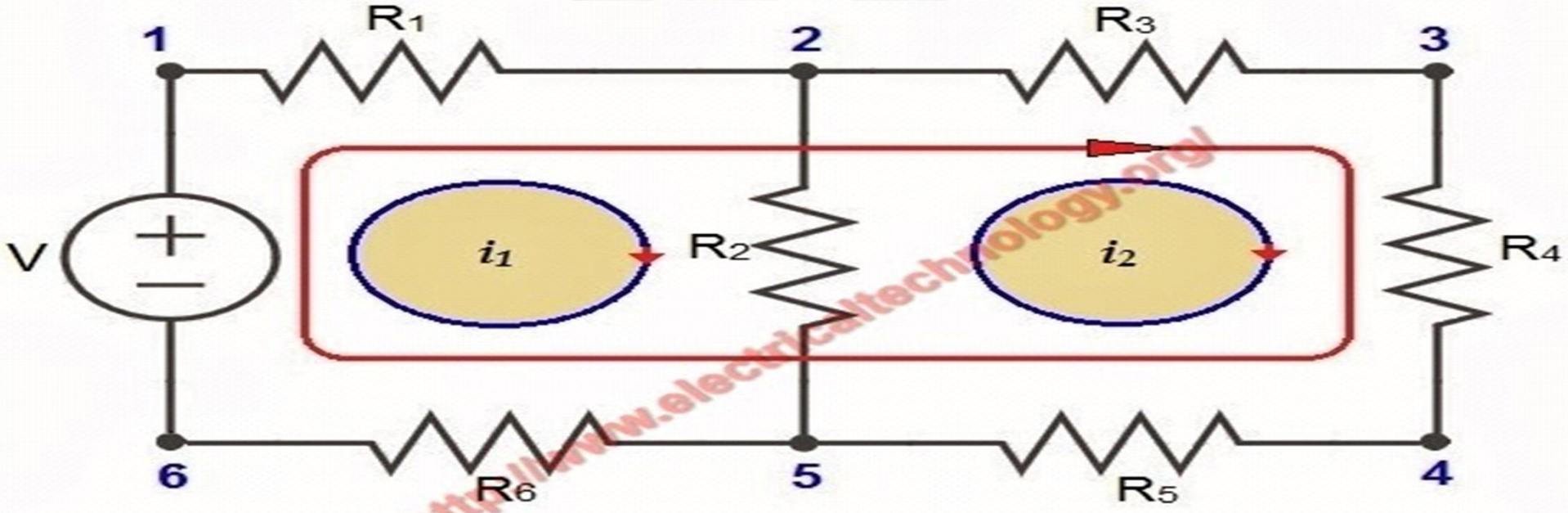
Loop

losed path in circuit where more than two meshes can be occurred is called loop i.e. there
many meshes in a loop, but a mesh does not contain on one loop.

Mesh

losed loop which contains no other loop within it or a path which does not contain on othe
ns is called Mesh.

Determine the number of Nodes, Branches, Loops and Meshes in a Circuit:



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