

Basic definitions-I

Introduction

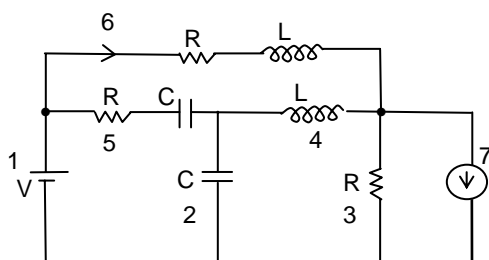
Network topology deals with concepts involving inter connections in the networks, rather than the actual nature of the elements.

Basic Definitions

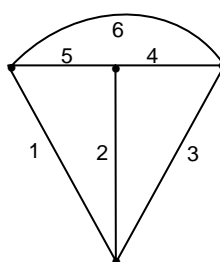
- (i) **Graph:** It is a representation of a network in which all network elements are replaced with either a straight line/curved line/ dotted line.

While constructing a graph from the given network all passive elements and the ideal voltage sources are replaced by short circuit, and all the ideal current sources are replaced by open circuit.

Ex: A network and its related graph is shown in fig (a) and fig (b)

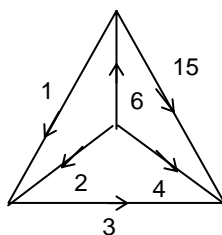


figure(a)



figure(b)

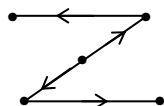
- (ii) **Directed graph:** A graph in which each branch is assigned with a direction is called a directed or oriented graph.
- (iii) **Complete graph (or) Standard graph:** For a standard graph, between any pair of nodes only one branch is connected for all combination.



Ex: The no. of edges in a complete graph with n - nodes is ${}^n C_2$.
 $\Rightarrow \frac{n(n-1)}{2} = b.$

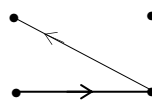
- (iv) **Connected graph:** In a connected graph all the nodes are connected by at least one branch, other wise it is said to be unconnected.

Ex:



(i)

Connected graph



(ii)

Unconnected graph

- (v) **Sub graph:** It is a graph with less no. of branches as compared with the original graph.

Ex:

