→ POSET (Partially Order Set):

Partial Ordering Relations / composite relations:

→ A relation 'R' is said to be as partial order relations if 'R' is reflexive, antisymmetric & trasitive.

POSET:

→ POSET :- A set 'A' with partial ordering relation 'R' defined on 'A' is called POSET. Denoted by [A; R].

e.g:

$A = \{1, 2, 3\}$.

$R_1 = \{(1,1), (2,2), (3,3)\}$ R✓ A.S✓ T✓

POSET ← $R_2 = \{(1,1), (2,2), (3,3), (1,2), (2,3), (1,3)\}$

R✓ A.S✓ T✓

CHAPTER # 10:

Graph:

→ Graph Theory:

→ Graph is using in every field of life and it is using in different applications: i.e:

Communication, Google Maps, Computation, Biology, chemistry, etc.

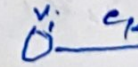
→ Graph can be represented as:

$G = (V, E)$.

V = Vertex Set $\{V_1, V_2, \ldots, V_n\}$.

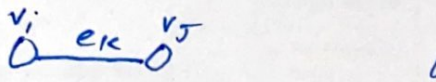
E = Edge Set $\{E_1, E_2, \ldots, E_m\}$

in which $e_k \in E$ is $e_k = \{V_i, V_j\}$.



→ Means every edge should have vertexs on both side.

→ Graph can be directed and undirected.



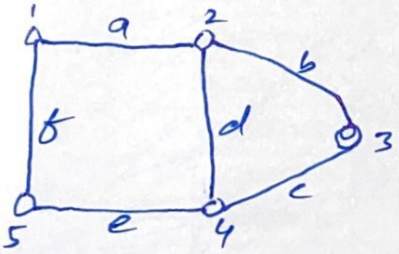
Undirected graph

Directed graph.

$|V|$ = Order of graph.

$|E|$ = Size of graph.

Example:



$G = (V, E)$.

$V = \{1, 2, 3, 4, 5\}$.

$E = \{a, b, c, d, e, f\}$.

Some important terms:

Adjacent vertex. {1, 2}, etc

Adjacent Edge. That connects two vertexs.

Self Loop.

Multiedges.

Psedograph. That have self loop & multiedges.

Multigraph. That have multiedges.

Simplegraph. No self loop & multiedges