Section-2

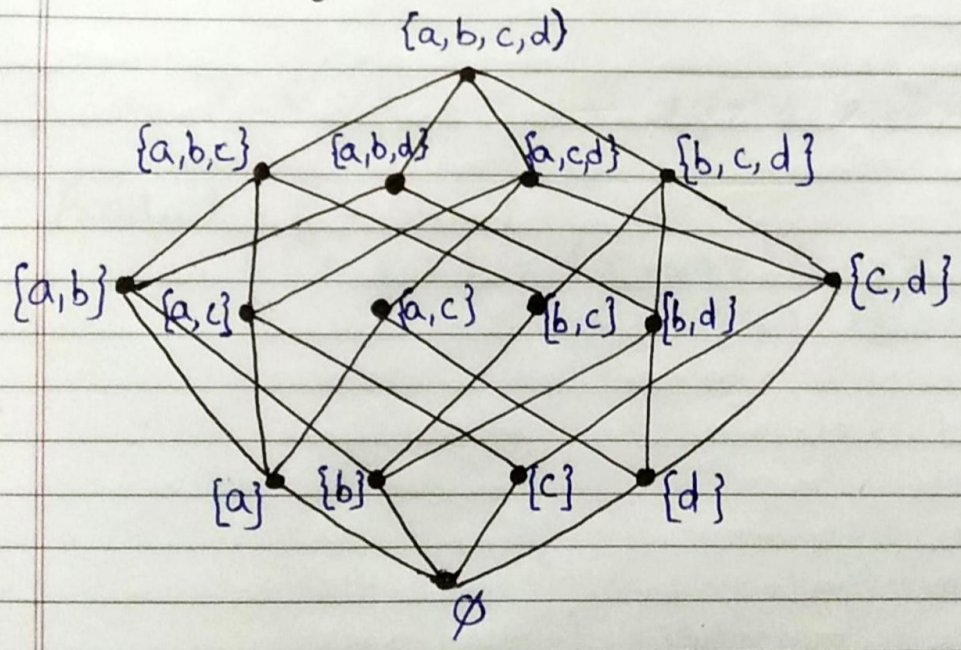
Ans-1 (a) The inclusion relation ($\subseteq$) is partial ordering on the power set of a set S if it satisfies the conditions:

Reflexivity : $A \subseteq A$ whenever A is a subset of S.

Antisymmetry: If A and B are positive integers with $A \subseteq B$ and $B \subseteq A$, then $A = B$.

Transitivity: If $A \subseteq B$ and $B \subseteq C$, then $A \subseteq C$.

Hasse diagram:



$(P(S), \subseteq)$ is not a lattice because $(\{a,b\}, \{b,d\})$ has no lub and glb.

(b) $f(x, y, z) = (x+y)z'$

x	y	z	x+y	z'	(x+y)z'
1	1	1	1	0	0
1	1	0	1	1	1
1	0	1	1	0	0
1	0	0	1	1	1
0	1	1	1	0	0
0	1	0	1	1	1
0	0	1	0	0	0
0	0	0	0	1	0

Sum-of-Product:

$$f(x, y, z) = xyz' + xy'z + x'yz'$$

Product-of-Sum:

$$f(x, y, z) = (x+y+z)(x+y'+z)(x'+y+z)(x'+y'+z)(x'+y'+z')$$