

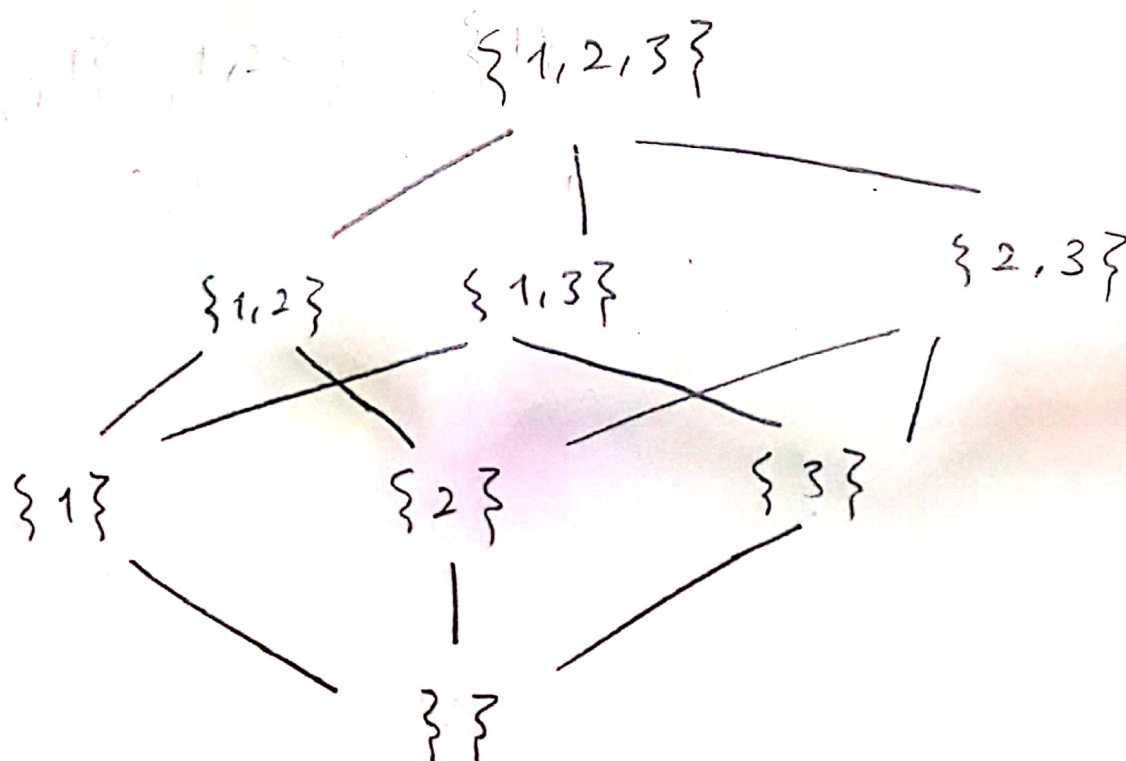
I hereby pledge on my honor that I will strictly adhere to academic integrity codes and the work done on this examination is solely my own and I will not receive/give any help from/to anybody or source during this examination.

a) Equivalence relation is a relation that is reflexive, symmetric and transitive.

b) Order relation is a relation that is reflexive, anti-symmetric and transitive. It is denoted as

(A, R) . Also called partial ordering set or POSET.
 \downarrow \hookrightarrow partial
 Set order

d) $A = \{1, 2, 3\}$



C) Let's say $A = \{a, b, c\}$, power set of A is

$$P = \{\{\}, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$$

A POSET is; reflexive, anti-symmetric and transitive

→ It is reflexive because a set is a subset of itself.

→ It is anti-symmetric. Because $a \subseteq b$, this can only be real if and only if the set a and the set b are equal

→ It is transitive because if $(a \subseteq b \subseteq c)$

a is a subset of b and b is a subset of c , we can guarantee that a is a subset of c

ex: $(\{a\} \subseteq \{a, b\} \subseteq \{a, b, c\})$

D) Greatest lower bound is ϕ (Empty set)

Least upper bound is $a \cup b$