Assignment #4

Due: Thursday 24th of December, 2020 before 11:55 pm

Note:

1. The assignment must be hand written and the pictures of the written assignment must be submitted on slate / slack
2. Late submissions receive zero credit.
3. If you write only the correct answer without steps you get very low credit.

Q:-1. [Points 10]

Which of the following are posets. Show all the work. Just writing the final answer will received a very low grade.

a) $(Z,=)$
b) $(Z,\neq)$
c) $(Z,\geq)$
d) $(Z,\leq)$
e) $(Z,|)$

Q:-2. [Points 10]

Is (S,R) a poset where S = set of all people in the world and $(a,b) \in R$ where a and b are people if (Do all the analysis as we did in the class. Just writing the final answer will receive a very low grade)

a) a is not shorter than b
b) a weights more than b
c) a is a brother of b
d) a and b do not have a common friend
e) a and b are enemies

Q:- 3

Determine whether the relations represented by these matrices are partial order or not (Provide details arguments, Just writing the final answer will receive a very low grade)

a)

$$\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

b)

$$\begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \end{bmatrix}$$

Q:- 4

Let s = {1,2,3,4}. With respect to the lexicographic order based on the usual 'less than' relation,

a) Find all the pairs in S * S less than (2,3).
b) Draw the hasse diagram of the of the poset (S * S, ≤).

Q:- 5

Draw the Hasse diagram for the subset relation on the power set P(S) where S = {a,b,c,d}.

Good luck