**United College of Engineering and Research, Allahabad**

**Department of Computer Science & Engineering**

**B.Tech CSE- IV Semester**

**Quiz-3**

**Course Name:** Discrete Structure and Theory of Logic  **AKTU Course Code:**KCS-303

**Time: 20 Minutes Max. Marks: 10**

* **All Questions are compulsory.**
* **All Questions carry one mark.**

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| **Q. No.** | **Questions** | **CO** |
| **1** | Let a set S = {2, 4, 8, 16, 32} and <= be the partial order defined by S <= R if a divides b. Number of edges in the Hasse diagram of is \_\_\_\_\_\_ a) 6 b) 5 c) 9 d) 4 | **CO3** |
| **2** | The less-than relation, <, on a set of real numbers is \_\_\_\_\_\_ a) not a partial ordering because it is not asymmetric and irreflexive equals anti-symmetric b) a partial ordering since it is asymmetric and reflexive c) a partial ordering since it is anti-symmetric and reflexive d) not a partial ordering because it is not anti-symmetric and reflexive | **CO3** |
| **3** | The inclusion of \_\_\_\_\_\_ sets into R = {{1, 2}, {1, 2, 3}, {1, 3, 5}, {1, 2, 4}, {1, 2, 3, 4, 5}} is necessary and sufficient to make R a complete lattice under the partial order defined by set containment. a) {1}, {2, 4} b) {1}, {1, 2, 3} c) {1} d) {1}, {1, 3}, {1, 2, 3, 4}, {1, 2, 3, 5} | **CO3** |
| **4** | Consider the ordering relation a | b ⊆ N x N over natural numbers N such that a | b if there exists c belong to N such that a\*c=b. Then \_\_\_\_\_\_\_\_\_\_\_ a) | is an equivalence relation b) It is a total order c) Every subset of N has an upper bound under | d) (N,|) is a lattice but not a complete lattice | **CO3** |
| **5** | A partial order ≤ is defined on the set S = {x, b1, b2, …bn, y} as x ≤ bi for all i and bi ≤ y for all i, where n ≥ 1. The number of total orders on the set S which contain the partial order ≤ is \_\_\_\_\_\_ a) n+4 b) n2 c) n! d) 3 | **CO3** |
| **6** | Let (A, ≤) be a partial order with two minimal elements a, b and a maximum element c. Let P:A –> {True, False} be a predicate defined on A. Suppose that P(a) = True, P(b) = False and P(a) ⇒ P(b) for all satisfying a ≤ b, where ⇒ stands for logical implication. Which of the following statements cannot be true? a) P(x) = True for all x S such that x ≠ b b) P(x) = False for all x ∈ S such that b ≤ x and x ≠ c c) P(x) = False for all x ∈ S such that x ≠ a and x ≠ c d) P(x) = False for all x ∈ S such that a ≤ x and b ≤ x | **CO3** |
| **7** | A Poset in which every pair of elements has both a least upper bound and a greatest lower bound is termed as \_\_\_\_\_\_\_ a) sublattice b) lattice c) trail d) walk | **CO3** |
| **8** | If every two elements of a poset are comparable then the poset is called \_\_\_\_\_\_\_\_ a) sub ordered poset b) totally ordered poset c) sub lattice d) semigroup | **CO3** |
| **9** | The graph given below is an example of \_\_\_\_\_\_\_\_\_ [discrete-mathematics-questions-answers-lattices-q6](https://www.sanfoundry.com/wp-content/uploads/2019/08/discrete-mathematics-questions-answers-lattices-q6.png) a) non-lattice poset b) semilattice c) partial lattice d) bounded lattice | **CO3** |
| **10** | Every poset that is a complete semilattice must always be a \_\_\_\_\_\_\_ a) sublattice b) complete lattice c) free lattice d) partial lattice | **CO3** |

Answer

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| 1-B | 2-A | 3-C | 4-D | 5-C | 6-D | 7- B | 8-B | 9-A | 10-B |