PUNE INSTITUTE OF COMPUTER TECHNOLOGY
DHANKAWADI, PUNE – 43.
Department of Computer Engineering

Academic Year: 2019-20 (Semester-I)

UNIT TEST I

Year: SE

Subject: Discrete Mathematics

Time: - 1 Hour Max. Marks: - 30

Instructions to the candidates:-

1. **All questions are compulsory.**

Q. No.	Sub. Q. No.	Question	Marks	Unit No.	Cos Covered	CO Mapping
1	A	Draw the Hasse diagram representing the partial ordering {(a,b) | a divides b} on {1,2,3,4,6,8,12} i. Find the minimal and Maximal elements ii. Find two examples of chain and antichain iii. Is Poset a Lattice ?	5	2	CO1, CO3	2,1
1	B	Let R be the relation on the set A={a,b,c,d,e,f} and R={(a,c),(b,d),(c,a),(c,e),(d,b),(d,f),(e,c),(f,d)}. Find the transitive closure of R using Warshalls algorithm.	5	2	CO3	2
2	A	Show that $1^3+2^3+3^3+...+n^3=(1+2+...+n)^2$ for every natural no n.	4	1	CO2	1
2	B	Let A={Φ,b} Construct the following sets i) A- Φ	3	1	CO1	2

		ii) {Φ}-A iii) A∪ P(A) Where P(A) is a power set.				
2	C	Represent the arguments using quantifiers and finds its correctness: All students in this class understand logic. Ganesh is a student in the class. Therefore Ganesh understands logic.	3	1	CO2	3
3	A	Prove that the set of rational numbers is countably infinite.	4	1	CO1	3
3	B	Let R and S be the relations on a set A. If R and S are antisymmetric, Prove or disprove that R∩S and R∪S are antisymmetric.	3	2	CO3	3
3	C	Let A={1,2,3,4,5}. Define the following relation R on A a R b if and only if a<b Find : (i) R in Roster form (ii) Domain and Range of R. (iii) Digraph of R	3	2	CO3	2