



ACE

Engineering College

(NBA ACCREDITED B.TECH COURSES & NAAC "A" GRADE)

An Autonomous Institution

Ankushapur (V), Ghatkesar (M), Madchal. Dist – 501 301

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech II Semester Regular(R18) (2020-21)

Sub:DM

ASSIGNMENT –I:

1. Obtain the PCNF of $(\sim p \rightarrow q) \wedge (q \rightarrow p)$ ii) $(p \wedge q) \vee (\sim p \wedge q)$
2. Show the implication $(P \rightarrow Q) \rightarrow Q \rightarrow P \vee R$
3. Construct the truth table $(P \wedge Q) \vee (Q \wedge R) \vee (P \wedge \sim R)$.
4. Explain in detail about Logical connection with example.
5. Test for Tautology $(\sim p \wedge (p \vee q)) \vee (\sim q)$
6. Obtain the PCNF $(p \wedge q) \vee (\sim p \wedge r) \vee (q \wedge r)$

ASSIGNMENT –II:

1. For any fixed integer n , prove that the relation congruent modulo n is an equivalence relation on set of all integers?
2. Draw the hasse diagram representing the positive divisors of 36?
3. Draw the Hasse diagram for divisibility relation $\{1, 2, 3, 4, 6, 8, 9, 12, 13, 24\}$
divisibility relation (a/b)

4. Let $A = \{x/x \text{ is real } x \geq -1\}$ and $B = \{x/x \text{ is real and } x \geq 0\}$ consider the function $f: A \rightarrow B$ defined by $f(a) = a^2 - 1$ for all a belongs. Prove that f is invertible and find the inverse of f .

5. The Relation R is defined on A is given by $R = \{(1,1), (2,2), (3,3), (1,3), (3,4), (3,5), (1,4), (4,4), (1,5), (2,3), (2,4), (2,5), (5,5)\}$ Write the relation matrix also draw the Hasse diagram.

6. Define the following a) Equivalence Relation b) Partial Ordering Relation

c) Total Ordering Relation d) Invertible function f) one to one correspondence function g) Equivalence class h) Partition of a set i) Hasse Diagram

7. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = \frac{1}{2}(x+1)$ and $g(x) = \frac{1}{2}(x-1)$ Find $g \circ f$ prove that $g \circ f$ is invertible. Find the inverse of $g \circ f$.