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| **P.V.P SIDDHARTHA INSTITUTE OF TECHNOLOGY (AUTONOMOUS)** |
| **BRANCH : Computer Science and Engineering** | **REGULATION : PVP-20** |
| **COURSE: B. Tech** | **SUBJECT : EM-III(Discrete Mathematical Structures)** |
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| **Subject Code: 20BS1303**  |

 | **Year and Semester: II Year / I Sem** | **Section: I** |
| **Academic Year:2023-24(Semester-I)** |
| **ASSIGNMENT-I** |

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| **Q.****NO** | **QUESTION** | **CO** | **LEVEL** |
| 1 | 1. **Construct** the principal conjunctive normal form of (P→Q) ∧¬(¬Q∨ ¬P)
2. **Construct** the disjunctive normal form of Q∨(P∧R) ∧¬[(P∨Q)∧R].
 | **1** | **L2** |
| 2 | **Show that** q ∧( u → r) ∧ {(r ∧ s )→( p ∨ t)} ∧{ q → (u ∧ s) }∧ ¬ t ⇒ p ∨ d using the rules of inference. | **1** | **L2** |
| 3 | **Apply** the rules of inference show that the following equivalences.1. (~P ^ (~Q^R)) V (Q ^R) V (P^R) ≡ R
2. (P→Q) ^ (R→Q) ≡ (PVR) → Q
 | **2** | **L3** |
| 4 | **Identify** the proper predicates and quantifiers for the following predicate statements.1. All men are mortal.
2. Some roses are yellow
3. All Russians are taller than all Americans.
4. Some monkeys have no tail.
 | **2** | **L3** |
| 5 | **Solve** the non-homogeneous equation xn = 10x n−1 − 25x n−2 + 8\*5 n for x0 = 6 and x1 = 10 using characteristic root method. | **3** | **L3** |
| 6 | **Solve** the recurrence relation xn = 3x n−1 − 2x n−2 + 2n with initial conditions x0 = 2, x1 = 4. | **3** | **L3** |