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| **P.V.P Siddhartha Institute of Technology(Autonomous)** | | | | | | | | | | |
| **Department of Computer Science and Engineering** | | | | | | | | | | |
| **Course: B.Tech** | | | **Year: II** | **Semester: I** | **Descriptive: II** | **A.Y:2023-24** | | | | |
| **Subject Code: 20BS1303** | | | **Subject Name: Engineering Mathematics-III**  **(Discrete Mathematical Structures)** | | | **Regulation:PVP20** | | | | |
| **Duration:**  **1 hr. 30 min.** | | | **Maximum Marks:15 Marks** | | | **Date:27/11/23** | | | **Session: F.N** | |
| **Answer all the Questions.**  **Each Question carries 5 Marks 3×5 =15M** | | | | | | | | | | |
| **Q. No** | **QUESTION** | | | | | | **Marks** | **CO** | | **Level** |
|  | | | | | | | | | | |
| **1.** | **a)** | Solve the recurrence relation usingcharacteristics method with initial conditions a0=2 and a1=5. | | | | | **2.5** | **CO3** | | **3** |
| **b)** | Explain Eulerian and Hamiltonian graphs with examples and draw the graphs of the following.   1. Eulerian but not Hamiltonian. 2. Hamiltonian but not Eulerian. | | | | | **2.5** | **CO1** | | **2** |
|  | | | | | | | | | | |
| **2.** | **a)** | Consider the relation R = {(a, b), (b, c), (b, d), (d, a), (c, c)} Show the Digraph and Adjacency Matrix for the relation R? | | | | | **3** | **CO1** | | **2** |
| **b)** | Let S150 be the set of all divisors of 150. Let the relation ≤ be given by a ≤ b if a│b on S150.   1. Draw the Hasse Diagram for the Poset (S150, |). 2. Find the least element and greatest element of this POSET if it exists. 3. Find the GLB and LUB of {5, 6, 10, 15}. | | | | | **2** | **CO4** | | **4** |
|  | | | | | | | | | | |
| **3.** | **a)** | Examine whether the following graphs are isomorphic or not. Justify your answer? | | | | | **3** | **CO3** | | **3** |
| **b)** | Discover a Minimal Spanning Tree for the given weighed graph using Kruskal’s algorithm. | | | | | **2** | **CO3** | | **3** |