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| **P.V.P Siddhartha Institute of Technology(Autonomous)** | | | | | | | | | | | | | | | **Signature of Invigilator with date:** | | **Marks Obtained:** | |
| **Department of Computer Science and Engineering** | | | | | | | | | | | | | | |
| **Course: B.Tech** | | **Year: II** | | | | **Semester: I** | | | | | **Objective: II** | | | |
| **Regulation:PVP20** | | **Maximum Marks:10Marks** | | | | | | | | | | | **Session: F.N** | |
| **A.Y:2023-24** | | **Date:27-11-2023** | | | | | | **Duration: 20 min** | | | | | | |
| **Subject Code: 20BS1303** | | | | | **Subject Name: Engineering Mathematics III(Discrete Mathematical Structures)** | | | | | | | | | | | | | |
| **Registered Number:** | | | | | | | | | | | | **Name:** | | | | | | |
| **Answer all the Questions. Each Question carries ½ Mark 20×½ M=10M** | | | | | | | | | | | | | | | | | | |
| **S. No** | **Question** | | | | | | | | | | | | | | | **CO** | **Level** | **Answer** |
| 1. | Find the value of a4 for the recurrence relation an=2an-1+3, with a0=6. | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) 320 | | b) 141 | | | | | c) 221 | | | | | | d)65 | |
| 2. | What is the solution to the recurrence relation an=5an-1+6an-2? | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) 2n2 | | b) 6n | | | | | c) (3/2)n | | | | | | d) n!\*3 | |
| 3. | What is the order of the following Recurrence Relation  an + an-1 – 6an-2 +4an-3+………..+an-k = 0. | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) 3rd | | | b) nth | | | | c) kth | | | | | | d) 2nd | |
| 4. | \_\_\_\_\_\_\_\_\_\_\_\_\_the solution for Non-Homogeneous Linear Recurrence Relation. | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) an = ap | | b) an = ah | | | | | c) an = ah +ap | | | | | | d) an = ah -ap | |
| 5. | What is the Cartesian product of set A and set B, if the set A = {1, 2} and set B = {a, b}? | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) { (1, a), (1, b), (2, a), (b, b) } | | | | | | | b) { (1, 1), (2, 2), (a, a), (b, b) } | | | | | | | |
| c) { (1, a), (2, a), (1, b), (2, b) } | | | | | | | d) { (1, 1), (a, a), (2, a), (1, b) } | | | | | | | |
| 6. | A Relation R on a set X is said to be an equivalence relation R if \_\_\_\_\_. | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Reflexive, Symmetric | | | | | | b) Reflexive, Symmetric & Transitive | | | | | | | | |
| c) Reflexive, Transitive | | | | | | d) Reflexive, Anti-Symmetric & Transitive | | | | | | | | |
| 7. | The Relation **≤** is a Partial Order if it is \_\_\_\_\_\_\_\_\_\_\_. | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Reflexive, Antisymmetric and  Transitive | | | | | | | | | b) Reflexive, Symmetric | | | | | |
| c) Ireflexive and Transitive | | | | | | | | | d) Asymmetric, Transitive | | | | | |
| 8. | 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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) 6 | | b) 5 | | | | | c) 9 | | | | | | d) 4 | |
| 9. | Length of the walk of a graph is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) The number of vertices in walk  W | | | | | | | | b) The number of edges in walk W | | | | | | |
| c) Total number of edges in a  graph | | | | | | | | d) Total number of vertices in a  graph | | | | | | |
| 10. | Directed graph is also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? | | | | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Connected  Graph | | | b) Digraph | | | | c) Disconnected  Graph | | | | | | d) Monograph | |

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| 11. | A POSET in which every pair of elements has both a least upper bound and a greatest lower bound is termed as \_\_\_\_\_\_\_. | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Sub Lattice | | | b) Lattice | | c) Trail | | | | | d) Walk | |
| 12. | A graph is a collection of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Row and Columns | | | | | | | | b) Vertices and Edges | | | |
| c) Equations | | | | | | | | d) None | | | |
| 13. | The degree of any vertex of graph is \_\_\_\_\_\_\_\_\_\_\_\_\_? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) The number of edges incident with vertex | | | | | | | | | | | |
| b) Number of vertices in a graph | | | | | | | | | | | |
| c) Number of vertices adjacent to that vertex | | | | | | | | | | | |
| d) Number of edges in a graph | | | | | | | | | | | |
| 14. | A graph with no edges is known as empty graph. Empty graph is also known as\_\_\_\_\_\_\_\_\_\_\_\_\_? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Trivial Graph | | | | | b) Regular Graph | | | | | | |
| c) Bipartite Graph | | | | | d) Complete Graph | | | | | | |
| 15. | An undirected graph G which is connected and acyclic is called | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Bipartite Graph | | | | b) Cyclic Graph | | | | | | | |
| c) Tree | | | | d) Forest | | | | | | | |
| 16. | An n-vertex graph has \_\_\_\_\_\_ edges. | | | | | | | | | | | | **CO1** | **L2** |  |
| a) n2 | | b) n-1 | | | | c) n\*n | | | d) n\*(n+1)/2 | | |
| 17. | A Minimal Spanning Tree of a Graph G is\_\_\_\_\_\_\_\_\_\_\_\_\_\_? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Spanning Sub Graph | | | | | b) Tree | | | | | | |
| c) Minimum Weights | | | | | d) All of above | | | | | | |
| 18. | Which of the following is not a type of Graph? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Euler | | | b Hamiltonian | | | | c) Tree | | | | d) Path |
| 19. | What will be the chromatic number for a complete graph having **n** vertices? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) 0 | b) 1 | | | | c) n | | | | | d) n! | |
| 20. | A path in graph G, which contains every vertex of G once and only once? | | | | | | | | | | | | **CO1** | **L2** |  |
| a) Eular Tour | | | | | b) Hamiltonian Path | | | | | | |
| c) Eular Trail | | | | | d) Hamiltonian Tour | | | | | | |