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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 -II** | **Objective-II** |  |  |
| **Regulation:PVP20** | **Maximum Marks: 10M** | **Session: F.N** |
| **A.Y:2023-24** | **Date:25-04-24** | **Duration: 20 min** |
| **Subject Code:20CS3402** | **Subject Name: Advanced Data Structures** |
| **Registered Number:** | **Name:** |
| **Answer all the Questions. Each Question carries ½ Mark 20×½ M=10M** |
| **S.No** | **Question** | **CO** | **Level** | **Answer** |
| 1 | A B-tree of order M is an M-ary tree with the following properties: | **CO1** | **L2** |  |
| a. The data items are stored at leaves.  | b. The root is either a leaf or has between two and M children. | c. All nonleaf nodes (except the root) have between M/2 and M children.  | d. All the above |
| 2 | A \_\_\_ operation return any specific name, just that finds on two elements return the same answer if and only if they are in the same set. | **CO1** | **L2** |  |
| a) Find | b) bunion |
| c) disjoint | d) Union by size |
| 3 | How many properties will an equivalent relationship satisfy? | **CO1** | **L2** |  |
| a) 1 | b) 2 |
| c) 3 | d) 4 |
| 4. | A relation R on a set S, defined as x R y if and only if y R x. This is an example of? | **CO1** | **L2** |  |
| a) reflexive relation | b) symmetric relation |
| c) transitive relation | d) invalid relation |
| 5. | Electrical connectivity is an example of equivalence relation. | **CO1** | **L2** |  |
| a) True | b)False |
| 6. |  What is the worst case efficiency for a path compression algorithm? | **CO1** | **L2** |  |
| a) O(N) | b) O(log N) | c) O(N log N) | d) O(M log N) |
| 7. | What is the depth of any tree if the union operation is performed by height? | **CO1** | **L2** |  |
| a) O(N) | b) O(log N) | c) O(N log N) | d) O(M log N) |
| 8. | A topological sort is an ordering of vertices in a directed acyclic graph, such that if there is a path from vi to vj, then vj appears after vi in the ordering.  | **CO1** | **L2** |  |
| 1. True
 | 1. False
 |
| 9. | How many topological orderings for the following graphF6 Madhuri Engineering 22.07.2022 D1 | **CO1** | **L2** |  |
| a) 4 | b) 5 | c) 6 | d) 2 |
| 10. | What is the running time of an unweighted shortest path algorithm whose augmenting path is the path with the least number of edges? | **CO1** | **L2** |  |
| a) O(|E||V|) | b) O(|E|) | c) O(|E| log |V|) | d) O(|E|2|V|) |
| **11.** | Bellmann ford algorithm provides solution for \_\_\_\_\_\_\_\_\_\_\_\_ problems. | **CO1** | **L2** |  |
| a) Network flow | b) Single source shortest path | c) All pair shortest path | d) Sorting |
| **12.** | What approach is being followed in Floyd Warshall Algorithm? | **CO1** | **L2** |  |
| a) Linear Programming | b) Backtracking |
|  | c) Greedy technique | d) Dynamic Programming |
| **13.** | The general method to solve the single-source shortest-path problem is known as Dijkstra’s algorithm is a prime example of a | **CO1** | **L2** |  |
| * a) Linear Programming
 | * b) Backtracking
 |
| * c) Greedy technique
 | * d) Dynamic Programming
 |
| **14.** | The average and best-case running time of the Rabin-Karp algorithm is \_\_, but its worst-case time is \_\_\_. | **CO1** | **L2** |  |
| a)O(n+m) and O(n) | b) O(n+m) and O(n+m) | C) O(n+m) and O(nm) | d) O(nm) and O(n) |
| **15.** | The \_\_\_\_\_\_ case of the Rabin-Karp algorithm occurs when all characters of pattern and text are the same as the hash values of all the substrings of T[] match with the hash value of P[].  | **CO1** | **L2** |  |
| a)Worst | b)Best | c)Average | d)All case |
| **16.** | The time complexity of the KMP algorithm is O(n+m) in the worst case | **CO1** | **L2** |  |
| a)True | b) False |
| **17.** | We calculate values in lps[] To keep track of the length of the longest \_\_\_\_\_\_ value for the previous index | **CO1** | **L2** |  |
| 1. Prefix suffix
 | 1. Suffix prefix
 | 1. Suffix suffix
 | 1. Prefix prefix
 |
| **18.** | 2-3 tree is a specific form of \_\_\_\_\_\_\_\_\_ | **CO1** | **L2** |  |
| a) B – tree | b) B+ – tree | c) AVL tree | d) Heap |
| **19.** | Which of the following is not true about the 2-3 tree? | **CO1** | **L2** |  |
| a)all leaves are at the same level | b)it is perfectly balanced | c)postorder traversal yields elements in sorted order | d)it is B-tree of order 3 |
| **20.** | AVL trees provide better insertion than 2-3 trees. | **CO1** | **L2** |  |
| 1. True
 | 1. False
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