Question bank

**Unit No: I (Trees)**

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| **Question NO** | **Question Statement** | **Level of mapping and Number** | | | **Blooms Level** | **Marks** |
| CO | PO | PSO |
| Q1. | Explain general tree and describe its various representations. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q2 | Describe the concept of binary tree and how we can convert general tree to binary tree | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 5 |
| Q3 | Explain various binary tree traversal techniques. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q4 | Differentiate between depth first and breadth first search techniques. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 4 | 4 |
| Q5 | Describe the various operations carried out on binary tree | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q6 | Describe Binary search tree and operations carried out on it | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q7 | Discuss the concept of Threaded binary tree. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q8 | Use in-order threaded binary tree to insert and delete nodes. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 3 | 6 |
| Q9 | Explain the use of threaded binary tree? | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q10 | |  | | --- | | Demonstrate the in order traversal of in-order threaded binary tree | | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 3 | 4 |
| Q11 | Use binary tree to create expression tree evaluation with example. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 3 | 6 |
| Q12 | Explain use of binary tree in Huffman's coding | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q13 | Describe construction of expression tree with example | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q14 | Discuss Huffman’s coding with example | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q15 | Discuss the various applications of trees. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q16 | Discuss binary tree extension and what is its use? | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q17 | Explain an algorithm to find out the height of a binary tree. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q18 | Describe binary search trees and its use. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q19 | Given a set of input representing the nodes of a binary tree, Describe a non-recursive algorithm that must be able to output the three traversal orders. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q20 | Explain the concept of Binary Search Tree (BST)? Make a BST for the following sequence of numbers 45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48 Traverse the tree in Preorder, Inorder and postorder. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q21 | Two Binary Trees are similar if they are both empty or if they are both nonempty and left and right sub trees are similar. Explain an algorithm to determine if two Binary Trees are similar. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q22 | The degree of a node is the number of children it has. Demonstrate that in any binary tree, the number of leaves are one more than the number of nodes of degree 2. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 3 | 6 |
| Q23 | Describe the maximum total number of nodes in a tree that has N levels? Note that the root is level (zero). | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q24 | Explain the non-recursive algorithm to traverse a tree in preorder. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q25 | Explain how many different binary trees and binary search trees can be made from three nodes that contain the key values 1, 2 & 3? | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q26 | Explain a non-recursive algorithm to traverse a binary tree in inorder. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| Q27 | use expression tree to represent following expression. Comment on the result that you get when this tree is traversed in Preorder, Inorder and postorder. (a-b) / ((c\*d)+e). | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 3 | 6 |
| Q28 | Discuss which one is faster? A binary search of an ordered set of elements in an array or a sequential search of the elements | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 4 |
| Q29 | Given the following inorder and preorder traversal use following sequence to construct a binary tree  Inorder sequence D, G, B, H, E, A, F, I, C Preorder sequence A, B, D, G, E, H, C, F, I | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 3 | 6 |
| Q30 | Explain the following terms with respect to Binary trees (i) Strictly Binary Tree (ii) Complete Binary Tree (iii) Almost Complete Binary Tree. | CO1 | PO1–3  PO2-2  PO3-2  PO4-2  PO5-3  PO12-3 |  | 2 | 6 |
| **Blooms level no** | **Blooms Taxonomy terms** | | | | | |
| **6** | **Description: Image result for bloom's taxonomy** | | | | | |
| **5** |
| **4** |
| **3** |
| **2** |
| **1** |

**Note:**

**1. Example demonstrate the method for filling the data**

**2. Blooms Taxonomy is provided for Ready Reference**

**Subject In-charge HOD**