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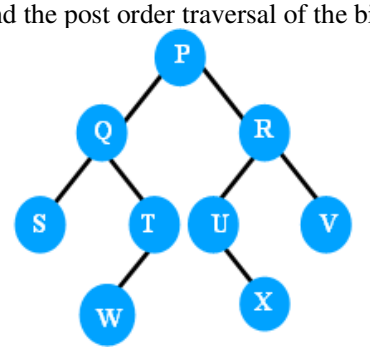
	CS-241 Data Structure-II (242401)	A N S
1)	Height of a binary tree is (A) MAX(Height of left Subtree, Height of right subtree)+1 (B) MAX(Height of left Subtree, Height of right subtree) (C) MAX(Height of left Subtree, Height of right subtree)-1 (D) None	A
2)	A tree with N nodes has ------ edges (A) N (B) N-1 (C) N-2 (D) N*N	B
3)	The balance factor for an AVL tree is either --- (A) -1, 0 or 1 (B) 0, 1 or 2 (C) -2, -1 or 0 (D) All of the above	A
4)	Which of the following data structure is used to represent hierarchical relationship between elements. (A)Graph (B) Linked List (C) Tree (D) Dequeue	C
5)	------- search method required input in ascending or descending order (A) linear search (B) binary search (C) DFS (D) None of the above	B
6)	Depth First Search is like a ------ traversal (A)Inorder (B) Preorder (C) Postorder (D) Stack	B
7)	In -------- search starts at beginning of list and check every element in the list (A)Linear Search (B) Binary Search (C) Hash Search (D) Binary Tree Search	A
8)	A null graph contains only----- (A) Directed node (B) Undirected node (C) Isolated node (D) Adjacent node	C
9)	Number of edges appearing in sequence of path is called ------ (A)Cyclic path (B) Length of path (C) Path (D) Indegree	B
10)	Which type of traversal of binary search tree outputs the value in sorted order? (A) Pre-order (B) In-order (C) Post-order (D) None	B
11)	Worst case complexity of linear search is---- (A) O(n) (B) O(n/2) (C) O(1) (D) O(n log n)	A
12)	Which of the following is a slowest sorting algorithm (A) Selection (B) Bubble (C) Merge (D) Insertion	D

13)	Key to address transformation technique is---- (A) Hashing (B) Collision resolution technique (C) Greedy technique (D) None of the above	A
14)	If a node having two children is to be deleted from binary search tree, it is replaced by its (A) In-order predecessor (B) In-order successor (C) Pre-order predecessor (D) None	B
15)	A sort in which adjacent elements are compared in list and switches where necessary is (A) Insertion (B) heap sort (C) quick sort (D) bubble sort	D
16)	In binary trees nodes with no successor are called (A) End node (B) Final node (C) Terminal node (D) Last node	C
17)	The time complexity of heap sort in worst case is (A) O(logn) (B) O(n) (C) O(nlogn) (D) $O(n^2)$	C
18)	Graphs are represented using ----- (A) Adjacency tree (B) Adjacency queue (C) Adjacency graph (D) Adjacency linked list	D
19)	How many swaps are required to sort the given array using bubble sort { 2, 5, 1, 3, 4} (A) 4 (B) 6 (C) 5 (D 7	A
20)	Time complexity of bubble sort in best case is (A) O(n) (B) O (nlogn) (C) $O(n^2)$ (D) $O(n(\log n)^2)$	A
21)	Which type of traversal of binary search tree outputs the value in sorted order? (A) Pre-order (B) In-order (C) Post-order (D) None	B
22)	Time complexity to sort elements of binary search tree is (A) O(n) (B) O(nlogn) (C) $O(n^2)$ (D) $O(n^2\log n)$	A
23)	Merge sort uses (A) Divide-and-conquer (B) Backtracking (C) Heuristic approach (D) Greedy approach	A

24)	If n numbers are to be sorted in ascending order in O(n log n) time, which of the following tree can be used (A) Binary tree (B) Binary search tree (C) Max-heap (D) Min-heap	D
25)	One can determine whether a binary tree is a Binary Search Tree by traversing it in ----- (A) Preorder (B) Inorder (C) Postorder (D) None of the above	B
26)	Which of the following is not a collision resolution technique? (A) Separate chaining (B) Linear probing (C) Quadratic probing (D) Hashing	D
27)	Which type of traversal of binary search tree outputs the value in sorted order? a) Pre-order (B) In-order (C) Post-order (D) None	B
28)	A directed graph is -------- if there is a path from each vertex to every other vertex in the digraph (A) Weakly connected (B) Tightly connected (C) Strongly connected (D) Linearly connected	C
29)	Trees are said ----- if they are similar and have same contents at corresponding nodes (A) Duplicate (B) Replica (C) Copies (D) Carbon copy	C
30)	In which of the following tree, parent node has a key value greater than or equal to the key value of both of its children? (A) Binary search tree (B) Threaded binary tree (C) Complete binary tree (D) Max-heap	D
31)	The in order traversal of tree will yield a sorted listing of elements of tree in A Binary Trees (B) B Binary Search Trees (C) Heaps (D) None of these	B
32)	Which of the following algorithm design technique is used in the quick sort algorithm? (A) Dynamic programming (B) Backtracking (C) Divide-and-conquer (D) Greedy method	C
33)	In a graph if e=(u,v) means ..... A. u is adjacent to v but v is not adjacent to u. B. e begins at u and ends at v C. u is node and v is an edge. D. both u and v are edges.	B
34)	A graph is said to be ------ if every node u in G is adjacent to every other node v in G (A) Absolute (B) Entire (C) Complete (D) Inclusive	C
35)	Quick sort is also known as ------ (A) Merge sort (B) Tree sort (C) Shell sort (D) Partition and exchange sort	D
36)	A graph is said to be ----- if its edges are assigned data (A) Tagged (B) Marked (C) Labeled (D) Sticked	C
37)	In a graph if e=[u,v], then u and v are called A. endpoints of e (B) adjacent nodes (C) neighbours (D) all of the above	D

38)	Binary trees with threads are called as ------ (A) Threaded trees (B) Special trees (C) Pointer trees (D) Special pointer trees	A
39)	Three standards ways of traversing a binary tree T with root R ..... A. Prefix, infix, postfix (B) B. Pre-process, in-process, post-process (C) C. Pre-traversal, in-traversal, post-traversal (D) Pre-order, in-order, post-order	D
40)	In threaded binary tree ..... points to higher nodes in tree. (A)Info (B) Root (C) Threads (D) Child	C
41)	If a node in BST has two children, then its inorder predecessor has (A) No left child (B) No right child (C) Two children (D) No child	B
42)	Which of the following is a disadvantage of using separate chaining using linked lists? (A) It requires many pointers (B) It requires linked lists (C) It uses array D) It does not resolve collision	A
43)	Which data structure is used in breadth first search of a graph to hold nodes (A) Stack (B) Tree (C) Queue (D) Array	C
44)	19. …… is the method used by card sorter. A. Radix sort (B) Insertion (C) Heap (Quick	A
45)	The process of arranging the elements either in ascending or descending order is called (A) Merging (B) Sorting (C) Traversing (D) Searching	B
46)	Which of the following is non -linear data structure (A) Stack (B) Strings (C) List (D) Tree	D
47)	Which of the following is identical to that of a separate chaining hash node? (A) Linked list (B) Array (C) Stack (D) Queue	A
48)	Which of these algorithmic approach tries to achieve localized optimum solution – (A) Greedy approach (B) Divide and conquer approach (C) Dynamic approach (D) All of the above	A
49)	Binary search algorithm cannot be applied to … (A) sorted linked list (B) sorted binary trees (C) sorted linear array (D) pointer array	A
50)	The number of edges from the root to the node is called _____ of the tree (A) Height (B) Depth (C) Length (D) Width	B
51)	Find the post order traversal of the binary tree shown below  (A) P Q R S T U V W X (B) W R S Q P V T U X (C) S W T Q X U V R P (D) S T W U X V Q R P	C
52)	If the number of records to be sorted is small, then …… sorting can be efficient. (A) Merge (B) Heap (C) Selection (D) Bubble	C

53)	A graph with all vertices having equal degree is known as a _____ (A) Multi Graph (B) Regular Graph (C) Simple Graph (D) Complete Graph	B
54)	The algorithm like merge sort, quick sort, and binary search is based on (A) Greedy algorithm (B) Hash table (C) Parsing (D) Divide and conquer algorithm	D
55)	What is the best case for linear search? A) O(nlogn) (B) O(logn) (C) O(n) (D) O(1)	D
56)	Where is linear searching used? (A) When the list has only a few elements (B) When performing a single search in an unordered list (C) Used all the time (D) When the list has only a few elements and When performing a single search in an unordered list	D
57)	A graph is collection of nodes, called--------- and line segments called arcs or -------- that connect pair of bodes (A) vertices, edges (B) edges, vertices (C) vertices ,path (D) graph node , edges	A
58)	What is Hash table (A) A structure that maps value to keys (B) A structure that maps keys to value (C) A structure used for storage (D) A structure used to implement stack and queue	B
59)	Which of the following is a disadvantage of linear search? (A) Requires more space (B) Greater time complexities compared to other searching algorithms (C) Not easy to understand (D) Not easy to implement	B
60)	Which of the problems cannot be solved by backtracking method? (A) n-queen problem (B) subset sum problem (C) hamiltonian circuit problem (D) travelling salesman problem	D
61)	Tree sort is also known as ----- (A) Quick (B) shell (C) heap (D) selection	C
62)	The technique for direct search is---- (A) Linear search (B) Binary Search (C) Tree (D) Hashing	D
63)	Which of the following is not the required condition for binary search algorithm (A) The list must be sorted (B) There should be direct access to middle element in any sublist. (C) There must be mechanism to delete and/or insert element in list (D) None of the above	C
64)	What is direct addressing? (A) Distinct array position for every possible key (B) Fewer array positions than keys (C) Fewer keys than array positions (D) Same array position for all keys	A

65)	Which of the following has search efficiency of O(1) (A) Tree (B) Heap (C) Hash Table (D) Link List	C
66)	In heap sort, after deleting the last minimum element, the array will contain elements in? (A) increasing sorting order (B) decreasing sorting order (C) tree inorder (D) tree preorder	B
67)	What data organization method is used in hash tables? (A) Stack (B) Array (C) Link list (D) Queue	C
68)	What is the hash function used in the division method? (A) h(k) = k/m (B) h(k) = k mod m (C) h(k) = m/k (D) h(k) = m mod k	B
69)	The steps in divide and conquer process that takes a recursive approach is said to be (A) Conquer/solve (B) Merge/combine (C) Divide/Break (D) both B and C	C
70)	The maximum number of nodes in a binary tree of depth 5 is (A) 31 (B) 16 (C) 32 (D) 15	A
71)	Which of the following is not a collision resolution technique? (A) Separate chaining (B) Linear probing (C) Quadratic probing (D) Hashing	D
72)	How many children does a binary tree have? (A) 2 (B) any number of children (C) 0 or 1 or 2 (D) 0 or 1	C
73)	In simple chaining, what data structure is appropriate? (A) Singly linked list (B) Doubly linked list (C) Circular linked list (D) Binary trees	B
74)	What is the worst case complexity of selection sort? (A) O(n log n) (B) O(log n) (C) O(n) (D) $O(n^2)$	D
75)	In a hash table of size 10, where is element 7 placed? (A) 6 (B) 7 (C) 17 (D) 16	B
76)	Which one of the following is not the method of hash function (A) Folding (B) Chaining (C) Modulo (D) MidSquare	B
77)	The total number of comparisons in bubble sort is------ (A) O(n log n) (B) O(2n) (C) O(n^2) (D) O(n)	A
78)	Advantages of linked list representation of binary trees over arrays? (A) dynamic size (B) ease of insertion/deletion (C) ease in randomly accessing a node (D) both dynamic size and ease in	D
79)	The number of elements in the adjacency matrix of a graph having 7 vertices is _____ (A) 7 (B) 14 (C) 36 (D) 49	D
80)	Which of the following is the most widely used external memory data structure? (A) AVL tree (B) B-tree (C) Red-black tree (D) None of the above	B
81)	TREE [1]=NULL indicates the tree is …….. Overflow (B) Underflow (C) Empty (D) Full	C

82)	Finding the location of given item in a collection of items is called---------- (A) Discovering (B) Finding (C) Searching (D) Mining	C
83)	How many passes does an insertion sort algorithm consist of? (A) N (B) N-1 (C) N+1 (D) N^2	B
84)	Which of the following is the application of graph (A) Computer Graphics (B) Telephone and computer network (C) PERT (D) All of the above	D
85)	What are null nodes filled with in a threaded binary tree? (A) inorder predecessor for left node and inorder successor for right node information (B) right node with inorder predecessor and left node with inorder successor information (C) they remain null (D) some other values randomly	A
86)	Which of the following operations are done in a hash table? (A) Insert only (B) Search only (C) Insert and search (D) Replace	C
87)	In dynamic programming, the technique of storing the previously calculated values is called _____ (A) Saving value property (B) Storing value property (C) Memoization (D) Mapping	C
88)	Which of the following problems should be solved using dynamic programming? (A) Mergesort (B) Binary search (C) Longest common subsequence (D) Quicksort	C
89)	The data for which you are searching is called (A) Search argument (B) sorting argument (C) detection argument (D) binary argument	A
90)	Travelling salesman is example of (A) Dynamic algorithm (B) Greedy algorithm (C) Recursive approach (D) Divide & Conquer	B
91)	Sorting is useful for? (A) Report generation (B) responding to queries easily (C) making searching easier and efficient (D) all of these	D
92)	What is the use of a hash function? (A) to calculate and return the index of corresponding data (B) to store data (C) to erase data (D) to change data	A
93)	What is hash function? (A) A function has allocated memory to keys (B) A function that computes the location of the key in the array (C) A function that creates an array (D) A function that computes the location of the values in the array	B
94)	For a binary search algorithm to work, it is necessary that the array (list) must be (A) Sorted (B) unsorted (C) in heap (D) popped out of stack	A

<table>
<tr><td>95)</td><td>The maximum number of comparisons needed to sort 7 items using radix sort is (assume each item is 4 digit decimal number)
(A) 280 (B) 40 (C) 47 (D) 38</td><td>A</td></tr>
<tr><td>96)</td><td>A connected graph T without any cycles is called--------
(A) Tree graph (B) free graph (C) tree (D) all of the above</td><td>D</td></tr>
<tr><td>97)</td><td>Which of the following is not a technique to avoid a collision?
(A)Make the hash function appear random
(B) Make the hash function appear random
(C) Use uniform hashing
(D)Increasing hash table size</td><td>D</td></tr>
<tr><td>98)</td><td>Binary Tree can have
(A)Can have 2 children
(D) Can have 1 children
(E) Can have 0 children
(D)All</td><td>D</td></tr>
<tr><td>99)</td><td>What is the worst case time complexity if insertion sort
(A) O(n) (B) O(n2) (C) O(nlogn) (D) None of these</td><td>B</td></tr>
<tr><td>100)</td><td>Match the following for binary tree traversal
<table><tr><td>(1) Pre Order</td><td>(A)Left Right Root</td></tr><tr><td>(2) In Order</td><td>(B)Left Root Right</td></tr><tr><td>(2) Post Order</td><td>(C)Root Left Right</td></tr></table>
(A)1 → A, 2 → B, 3 → C
(B)1 → C, 2 → B, 3 → A
(C)1 → A, 2 → C, 3 → B
(D)1 → B, 2 → A, 3 → C</td><td>B</td></tr>
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