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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

B.TECH

FIRST YEAR (SEMESTER-II) THEORY EXAMINATION (2020-2021)

(Objective Type)

Subject Code: ACSBS0203 **Max. Mks. : 70**

Subject: Data Structures & Algorithms **Time : 70 Minutes**

General Instructions:

All questions are compulsory.

Question No- 1 to 15 are objective type question carrying 2 marks each.

Question No- 16 to 35 are also objective type/Glossary based question carrying 2 marks each.

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Type	Difficulty	Correct	Option1	Option2	Option3
1	In simple terms, we can say that an algorithm is a step-by-step procedure for performing some task in a finite amount of time.		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	TRUE	FALSE	TRUE	Maybe
2	Which case of data structure operation takes maximum time?		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	Worst Case	Worst Case	Average Case	Best Case
3	Which of these best describes an array?		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	Container of objects of similar types	A data structure that shows a hierarchical behavior	Container of objects of similar types	Container of objects of mixed types
4	The postfix form of A*B+C/D is ?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	AB*CD/+	*AB/CD+	AB*CD/+	A*BC+/D
5	If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	ABCD	ABCD	DCBA	DCAB
6	In what tree, for every node the height of its left subtree and right subtree differ at least by one?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	AVL tree	Binary search tree	AVL tree	Threaded binary tree
7	In which traversal root node in visited at the last ?		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	Post-order traversal	Post-order traversal	Pre-order traversal	In-order traversal
8	What graph traversal algorithm uses a queue to keep track of vertices which need to be processed?		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	BFS	BFS	DFS	
9	Which of the following best describes sorting?		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	Arranging the data(record) in some given order	Accessing and processing each record with a given key	Finding the ocation of the record with a given key	Arranging the data(record) in some given order
10	The algorithm design technology used in the quick sort algorithm is:		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	Divide and Conquer	Dynamic programming	Back tracking	Divide and Conquer
11	The goal of hashing is to produce a search that takes:		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	O(1) time	O(1) time	O(n) time	O(log n) time
12	What is the number of edges present in a complete graph having n vertices?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	(n*(n-1))/2	(n*(n+1))/2	(n*(n-1))/2	n
13	A graph with all vertices having equal degree is known as a __________		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	Regular Graph	Multi Graph	Regular Graph	Simple Graph
14	Which of the following ways can be used to represent a graph?		Single Choice Questions	Single Choice Questions	2	Single Choice	Brilliant	Adjacency List, Adjacency Matrix as well as Incidence Matrix	Adjacency List and Adjacency Matrix	Incidence Matrix	Adjacency List, Adjacency Matrix as well as Incidence Matrix
15	To verify whether a function grows faster or slower than the other function, we have some asymptotic or mathematical notations, which is_________.		Single Choice Questions	Single Choice Questions	2	Single Choice	Smart	All of the above	Big Omega Ω (f)	Big Theta θ (f)	Big Oh O (f)

Q.No	Question Content	Question Image	Category	Sub Category	Marks	Type	Difficulty	Correct	Option1	Option2	Option3
16	The two main resources that we consider for an algorithm are__________		Glossary I	Glossary I	2	Single Choice	Smart	Memory space and processor time	Zero or more	Memory space and processor time	Non linear
17	__________ condition happen if base condition is not defined in recursion.		Glossary I	Glossary I	2	Single Choice	Smart	Stack overflow	Non linear	Zero or more	Memory space and processor time
18	An algorithm may have __________ ‘inputs’ quantities.		Glossary I	Glossary I	2	Single Choice	Smart	Zero or more	Non linear	Zero or more	Memory space and processor time
19	In __________ data structure , data contain hierarchical and network relationship between elements.		Glossary I	Glossary I	2	Single Choice	Brilliant	Non linear	Non linear	Zero or more	Memory space and processor time
20	__________ matrix has most of the elements (not all) as Zero.		Glossary II	Glossary II	2	Single Choice	Brilliant	Sparse	Tower of Hanoi	Sparse	Doubly linked list
21	In __________ , two pointers are maintained to store next and previous nodes.		Glossary II	Glossary II	2	Single Choice	Smart	Doubly linked list	Tower of Hanoi	Sparse	Doubly linked list
22	__________ form of access is used to add and remove nodes from a queue.		Glossary II	Glossary II	2	Single Choice	Brilliant	FIFO, First In First Out	Tower of Hanoi	Sparse	Doubly linked list
23	__________ is an application of stack.		Glossary II	Glossary II	2	Single Choice	Brilliant	Tower of Hanoi	Tower of Hanoi	Sparse	Doubly linked list
24	The number of edges from the root to the node is called __________ of the tree.		Glossary III	Glossary III	2	Single Choice	Brilliant	Depth	B-tree of order n	n+1	Depth
25	In a binary search tree,__________ traversals would print the numbers in the ascending order.		Glossary III	Glossary III	2	Single Choice	Smart	In-order traversal	B-tree of order n	n+1	Depth
26	__________ is a order-n multiway tree in which each non-root node contains at least (n – 1)/2 keys.		Glossary III	Glossary III	2	Single Choice	Brilliant	B-tree of order n	B-tree of order n	n+1	Depth
27	The no of external nodes in a full binary tree with n internal nodes is __________		Glossary III	Glossary III	2	Single Choice	Smart	n+1	B-tree of order n	n+1	Depth
28	__________ is the time complexity of quicksort.		Glossary IV	Glossary IV	2	Single Choice	Brilliant	O(n*n)	External sorting	O(n*n)	Worst-case
29	If the given input array is sorted or nearly sorted, __________ algorithm gives the best performance.		Glossary IV	Glossary IV	2	Single Choice	Smart	Insertion sort	External sorting	O(n*n)	Worst-case
30	__________ algorithm that uses tape or disk during the sort.		Glossary IV	Glossary IV	2	Single Choice	Smart	External sorting	External sorting	O(n*n)	Worst-case
31	The __________ occur in linear search algorithm when Item is the last element in the array.		Glossary IV	Glossary IV	2	Single Choice	Brilliant	Worst-case	External sorting	O(n*n)	Worst-case
32	The__________ process updates the costs of all the vertices V, connected to a vertex U, if we could improve the best estimate of the shortest path to V by including (U,V) in the path to V.		Glossary V	Glossary V	2	Single Choice	Smart	Relaxation	Tree	Degree	Relaxation
33	In __________ method, the file allocation table contains a separate one level index for each file, the index has one entry for each portion allocated to the file.		Glossary V	Glossary V	2	Single Choice	Brilliant	Indexed allocation	Tree	Degree	Relaxation
34	The __________ of any vertex of a graph is the number of edges incident with vertex.		Glossary V	Glossary V	2	Single Choice	Smart	Degree	Tree	Degree	Relaxation
35	A graph is called a __________ if it is connected acyclic graph.		Glossary V	Glossary V	2	Single Choice	Smart	Tree	Tree	Degree	Relaxation

Option4
None of the above
None of the above
All of the mentioned
ABCD+/*
None of these
Complete tree
None of the above
Adding a new record to the data structure
Greedy method
O(nlog n) time
Information given is insufficient
Complete Graph
None of the mentioned
All of the above

Option4
Stack overflow
Stack overflow
Stack overflow
Stack overflow
FIFO, First In First Out
FIFO, First In First Out
FIFO, First In First Out
FIFO, First In First Out
In-order traversal
In-order traversal
In-order traversal
In-order traversal
Insertion sort
Insertion sort
Insertion sort
Insertion sort
Indexed allocation
Indexed allocation
Indexed allocation
Indexed allocation