School of Computer Science

Data Structures(23CS302)

8. Unit Wise Question Bank

UNIT I

S. No	Question	BT	CO	PO
PART-A (Short Answer Questions)				
1	Explain how an array different from linked list.	L2	CO1	PO2
2	Define Stack and where it can be used.	L1	CO1	PO1
3	Explain about queue operations in brief.	L2	CO1	PO2
4	Define LIFO.	L1	CO1	PO1
5	Which data structure is used for dictionary and spell Checker?	L1	CO1	PO2
6	Define Data Structures.	L1	CO1	PO1
7	Define the node, siblings, left-skewed tree.	L1	CO1	PO1
8	Write short notes on different types of queues.	L1	CO1	PO2
PART-B (Long Answer Questions)				
9	Explain the various operations that can be performed on Different Data Structures.	L2	CO1	PO2
10	Demonstrate Queue ADT operations using Array.	L3	CO1	PO3
11	Distinguish between queues and linked list.	L4	CO1	PO2
12	Define Stack. Explain about application of stack.	L1,L2	CO1	PO1
13	Demonstrate the following operations in single linked list. i) Insert an element at n^{th} position of linked list ii) Insert an element at 1^{st} position of linked list	L3	CO1	PO3
14	Define the implementation of Queue with array and linked list.	L1	CO1	PO1
15	What is Data structure? Explain the representation of data structure.	L2	CO1	PO2
16	List out the algorithm steps for a stack insertion operation.	L4	CO1	PO1
17	Write the differences between linear and non linear data structures.	L1	CO1	PO2

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18	Convert infix expression into its equivalent prefix expression: A+(B+D)/E – F*(G+H/k).	L5	CO1	PO2

UNIT II

S. No	Question	BT	CO	PO
PART-A(Short Answer Questions)				
1	Define hash functions?	L1	CO2	PO1
2	Define Dictionaries?	L1	CO2	PO1
3	List the applications of Dictionaries?	L4	CO2	PO1
4	List the applications of hashing?	L4	CO2	PO1
5	Define hashing and hash table	L1	CO2	PO1
6	Define quadratic probing	L1	CO2	PO1
7	Explain extendable hashing	L2	CO2	PO2
PART-B(Long Answer Questions)				
8	Distinguish between double hashing and rehashing.	L4	CO2	PO2
9	Explain about different representations of Dictionaries.	L2	CO2	PO2
10	Explain the various operations of Dictionaries.	L2	CO2	PO2
11	Distinguish between double hashing, rehashing, and Extendible hashing.	L4	CO2	PO3
12	Explain about linear probing and quadratic probing.	L2	CO2	PO2
13	Discuss any 2 different hashing functions with an example.	L2	CO2	PO2
14	List the uses of Hash table	L3	CO2	PO1
15	Analyze input (371, 323, 173, 199, 344, 679, 989) and hash function h(x)=x mod 10, show the result using quadratic probing, and double hashing h2(x)=7-(x mod 7)	L4	CO2	PO3
16	Use quadratic probing to fill the Hash table of size 11. Data elements are 23,0,52,61,78,33,100,8,90,10,14.	L3	CO2	PO3
17	Define collision and discuss any two collision resolution techniques?	L2	CO2	PO1

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UNIT III

S.No	Question	BT	CO	PO
PART-A(Short Answer Questions)				
1	Define searching in binary search tree with an example.	L1	CO3	PO1
2	Explain the height of an AVL Tree.	L2	CO3	PO2
3	Describe Splay tree with example.	L2	CO3	PO2
4	Define AVL tree. Explain the acceptable balancing factor of AVL tree.	L1	CO3	PO1
5	Distinguish between BST and AVL tree.	L4	CO3	PO2
6	Construct the binary search tree for the below given data 35,20,15,31,89, -1,36,45	L6	CO3	PO2
7	What are the advantages of B-tress.	L1	CO3	PO2
PART-B(Long Answer Questions)				
8	Discuss about Binary search Tree and operations on it.	L1	CO3	PO2
9	Describe in brief about array and linked representations of Binary search tree.	L2	CO3	PO2
10	Describe a procedure to insert and delete an element into a AVL Tree.	L2	CO3	PO2
11	Describe a procedure to search an element in a AVL Tree.	L2	CO3	PO2
12	Explain about B+ Trees and Splay tree with examples.	L2	CO3	PO2
13	Explain tree traversals with example.	L2	CO3	PO2
14	Given In Order traversal of a binary tree is D,B,H,E,I,A,F,J,C,G and post order	L6	CO3	PO3

	traversal is D,H,I,E,B,J,F,G,C,A. Construct binary tree and find the pre order traversal.			

UNIT IV

Long Answer Questions-

S.No	Question	BT	CO	PO
PART-A(Short Answer Questions)				
1	Write a short note on representation of Graphs.	L2	CO4	PO1
2	Distinguish between graph and tree.	L4	CO4	PO2
3	Define sorting. Explain about external Sorting.	L1	CO4	PO1
4	Describe the concept of graph traversals with an example.	L2	CO4	PO2
5	Distinguish between BFS and DFS.	L2	CO4	PO2
6	Discuss about connected and disconnected graphs.	L2	CO4	PO2
7	Define weighted graph.	L1	CO4	PO1
8	Define spanning tree.	L1	CO4	PO1
9	List various algorithms to find minimum spanning tree?	L2	CO4	PO1
10	What is an isolated vertex?	L1	CO4	PO1
11	Explain the algorithm of Merge sort.	L2	CO4	PO2
PART-B(Long Answer Questions)				
12	Explain the graph traversal methods.	L2	CO4	PO2
13	Explain the time complexity of merge sort in best, worst and Average case.	L2	CO4	PO2
14	Illustrate the concept of Merge sort with an example.	L2	CO4	PO3
15	Implement Merge sort using C.	L3	CO4	PO2
16	Illustrate the concept of Heap sort with an example?	L2	CO4	PO3
17	Explain DFS graphs traversal algorithms	L3	CO4	PO2

	with suitable example.			
18	Define Minimum spanning tree? Explain Kruskal's Algorithm with example.	L3	CO4	PO2
19	Illustrate the concept of Quick sort with an example.	L2	CO4	PO2
20	Illustrate the concept of Heap sort with an example.	L2	CO4	PO2

UNIT V

S.No	Question	BT	CO	PO
PART-A(Short Answer Questions)				
1	Define pattern matching?	L1	CO5	PO1
2	Explain short note on Pattern matching algorithms?	L2	CO5	PO2
3	Define Compressed Tries?	L1	CO5	PO1
4	Define Standard Tries?	L1	CO5	PO1
5	Explain about Knuth-Morris-Pratt algorithm?	L2	CO5	PO2
6	What are the advantages of tries	L1	CO5	PO1
7	What are the merits and demerits of brute force method for pattern matching?	L2	CO5	PO1
PART-B(LONG Answer Questions)				
8	Explain about Knuth-Morris-Pratt algorithm with example?	L2	CO5	PO2
9	Explain about Pattern matching algorithms and its applications?	L2	CO5	PO2
10	Explain about Compressed Tries and Suffix tries?	L2	CO5	PO2
11	Distinguish between Standard Tries and Compressed Tries?	L4	CO5	PO2
12	Distinguish between Suffix tries and Compressed Tries?	L4	CO5	PO2
13	Write an Algorithm for KMP pattern technique.	L2	CO5	PO1
14	What is brute-force algorithm. Explain string pattern matching techniques.	L3	CO5	PO1
15	You are given a string "S" and s pattern "P",	L4	CO5	PO3

	you need to check if the pattern is there in the string by using Brute force algorithm S= "prodevelopertutorial" P= "rial"			
16	"A compressed trie is an advanced version of the standard trie." Support or oppose this statement with necessary explanation.	L4	CO5	PO3