R22

Code No: R22A0503

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, June 2024

Data Structures

(CSE, IT, CS&IT, CSE-CS, CSE-AIML, CSE-DS, CSE-IOT & B.Tech-AIML)

Roll No										

Time: 3 hours **Max. Marks: 60**

Note: This question paper contains two parts A and B
Part A is compulsory which carries 10 marks and Answer all questions.
Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

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PART-A (10 Marks)

Write all answers of this PART at one place

1	A	What is Data Abstraction.	**[1M]**
	B	What is the use of function overloading?	**[1M]**
	C	Write the general procedure of linear search method.	**[1M]**
	D	Write Bubble sort technique.	**[1M]**
	E	Give any two examples of non linear data structures .	**[1M]**
	F	Write any two applications of stacks.	**[1M]**
	G	What is the key difference between linear list representation and skip list representation?	**[1M]**
	H	Define 'in degree' and 'out degree' of a node in graph.	**[1M]**
	I	Define BST(Binary Search Tree) and give an example.	**[1M]**
	J	Define depth or height of a binary tree.	**[1M]**

PART-B (50 Marks)

SECTION-I

2	A	How can the function overloading be achieved? Explain with an example.	**[5M]**
	B	What is Constructor? Explain it's use with an example code.	**[5M]**
		OR	
3	A	Explain multiple Inheritance with an example.	**[5M]**
	B	What are Abstract classes? Briefly discuss the role of abstract classes in the development of complex software applications.	**[5M]**

SECTION-II

4	A	Write the step by step procedure to partition the list based on the pivot as part of quick sort algorithm.	**[5M]**
	B	Trace merge sort algorithm on the following list of numbers: 10, 15, 22, 8, 4, 25, 20, 17	**[5M]**
		OR	
5	A	Write an algorithm for sorting the unordered list using selection sort method.	**[5M]**
	B	Is it possible to implement Binary Search procedure on unsorted list?	**[5M]**

Justify your answer with suitable justification.

SECTION-III

6	A	"Array is not suitable representation structure for representing priority queue" - Justify this statement.	**[5M]**
	B	Define priority queue and write short note on suitable representation method of priority queue.	**[5M]**
		OR	
7	A	Illustrate the use of stack in evaluating the following post fix expression: ab+cd-2*	**[5M]**
	B	Define Queue and Circular Queue. Write the underflow and overflow conditions on Queue and Circular Queue.	**[5M]**

SECTION-IV

8	A	Write an algorithm for DFS(Depth First Search).	**[5M]**
	B	"Adjacency Matrix of a directed graph is not symmetric" - Justify this statement.	**[5M]**
		OR	
9	A	Define the following terms connected to Graph with examples: i) Path ii) Degree of node iii) Connected Graph iv) Weighted Graph v) Unweighted Graph	**[5M]**
	B	Write short note the advantages and limitations of Adjacency Matrix as compared to Adjacency List representation of a graph.	**[5M]**

SECTION-V

10	A	Define AVL tree . Construct AVL tree from the following list of numbers : 10, 25, 15, 20, 18, 6, 2, 5	**[5M]**
	B	Take an example full binary tree of depth '3' and write it's inorder traversal.	**[5M]**
		OR	
11	A	Define BST. Write the general procedure for constructing a BST from the given list of numbers.	**[5M]**
	B	Define Expression tree and construct an expression tree for the following infix expression: a + b / (c – d) * (2+4)	**[5M]**

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