P 1 Data structure

Seat No. _____

DURATION: - 2½ hrs 732191024 MARKS:- 75

Note: - (1) All questions are compulsory.
(2) Figures to the right indicate full marks
(3) Answer to each question must being on a new page

Q.1)	**Attempt the following (Any 3)**	**15M**
1)	Describe Various operation that can be performed on data structure	CO1-C
2)	What do you mean by ADT? How it is different from primitive data types?	CO1-R
3)	Consider 2- Dimensional Array D [5:7,-3:6]. If the base address of D is 1500 and each element of array occupies 4 memory cells the find the address of $d_{6,0}$ element using row major order and column major order.	CO1-R/U
4)	Write an algorithm for sorting an array using Bubble sort algorithm.	CO4-C
5)	Explain an advantages & Limitations of array.	CO1-C
6)	Explain importance of algorithm analysis	CO2-C
Q.2)	**Attempt the following (Any 3)**	**15M**
1)	Explain an application of linked list.	CO2-R/U
2)	Write an algorithm to traverse one-way linked list.	CO2-U
3)	Write an algorithm to delete a node at beginning of linked list along with representation.	CO2-E
4)	Write an algorithm for splitting a linked list into two linked list with its pointer variables 'Begin' and 'Beginz' respectively.	CO2-C
5)	Write a short note on double linked list.	CO2-R
6)	Explain the circular linked list.	CO2-U
Q.3)	**Attempt the following (Any 3)**	**15M**
1)	Write an algorithm for push and pop operation of the stack using linked list representation	CO2-A
2)	Write short note on Dequeue.	CO2-R
3)	Transform the given expression I into its Equivalent postfix expression P using algorithm I=(5+6)*7-(3*2)-8	CO2-U
4)	Explain the application of stack in detail	CO2-U
5)	Convert following expressions: i) Infix to prefix ((a+b)/d^((e-f)+9)) ii) Infix to postfix (x*y)+(z+((a+b-c)*d))	CO2-U
6)	Explain the application of (i) Priority Queue (ii) Queue	CO2-U
Q.4)	**Attempt the following (Any 3)**	**15M**
1)	Explain the following terms regarding binary Tree: i) Similar binary Trees. ii) equivalent binary Tree. Iii)Complete binary Tree. iv) almost complete binary Tree. v) strictly binary Tree.	CO3-U
2)	Write a note on BST.	CO3-R
3)	Explain binary search algorithm with example.	CO4-U
4)	Explain selection sort algorithm with example.	CO4-U

5) Examine the technique to produce Huffman Tree and Huffman codes for the given text- ACAEBCABEABADFCBD — CO3-A

6) Write an algorithm to traverse binary tree recursively in. — CO3-U/R
   i) Preorder manner.
   ii) Inorder manner.

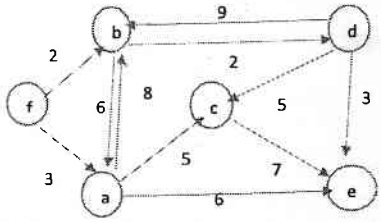
Q.5) Attempt the following (Any 3) — **15M**

1) Explain Adjacency list representation of graph — CO3-U

2) Explain the graph terminology — CO3-U

3) Explain the following hashing: — CO3-U/R
   i)Double hashing. ii)Bucket hashing.

4) Using Dijkstra algorithm find the shortest distance of all the nodes from source code using following trees. — CO3-R/A



5) Write Warshall's algorithm for finding the path matrix for Graph'G' — CO3-A

6) Write short note on hash function. — CO3-R/U

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