Q.P.Code:36288

Time: 3 Hours   **Marks: 80**

N.B: (1) Question No.1 is compulsory

(2) Attempt any three questions of the remaining five questions

(3 Figures to the right indicate full marks

(4) Make suitable assumptions wherever necessary with proper justifications

Q.1 (a) Explain different types of data structures with example   **(05)**

(b) What is a graph? Explain methods to represent graph.   **(05)**

(c) Write a program in 'C' to implement Merge sort.   **(10)**

Q.2 (a) Write a program in 'C' to implement QUEUE ADT using Linked-List. Perform the

following operations: **(10)**

(i) Insert a node in the Queue.

(ii) Delete a node from the Queue

(iii) Display Queue elements

(b) Using Linear probing and Quadratic probing, insert the following values in

the hash table of size 10. Show how many collisions occur in each iteration:

28, 55,71,67,11,10,90,44   **(10)**

Q.3 (a) Write a program in 'C' to evaluate postfix expression using STACK ADT   **(10)**

(b) Explain different types of tree traversals techniques with example. Also write

recursive function for each traversal technique.   **(10)**

Q.4 (a) State advantages of Linked-List over arrays. Explain different applications

of Linked-list   **(10)**

(b) Write a program in 'C' to implement Circular queue using arrays.   **(10)**

Q.5 (a) Write a program to implement Singly Linked List. Provide the following

operations: **(10)**

(i) Insert a node at the specified location.

(ii) Delete a node from end

(iii) Display the list

(b) Insert the following elements in AVL tree: 44, 17, 32, 78, 50, 88, 48, 62, 54.

Explain different rotations that can be used.   **(10)**

Q.6 Explain the following (any two)   **(20)**

(a) Splay Tree and Trie

(b) Graph Traversal Techniques

(c) Huffman Encoding

(d) Double Ended Queue

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