Seat No.: _____

Enrolment No.____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Examination December 2009

Subject code: 130702 Date: 19 /12 / 2009

Subject Name: Data & File Structure. Time: 11.00 am – 1.30 pm Total Marks: 70

Instructions:

- Attempt all questions.
 Make suitable assumptions wherever necessary.
 Figures to the right indicate full marks.

Q.1	(a)	Define data structure. List the various linear and non-linear data	05
Q.2	(b) (c) (a) (b)	Structures and explain them in brief. Discuss the basic operations performed with linear structure. What is recursion? Write a C program for GCD using recursion. Write an algorithm to convert infix expression to postfix expression. Write an algorithm for evaluation of postfix expression and evaluation the following expression showing every status of stack in tabular form.	05 04 05 07
		(i) 5 4 6 + * 4 9 3 / + * (ii) 7 5 2 + * 4 1 1 + / -	
		OR	
	(b)	Trace the conversion of infix to postfix form in tabular form.	07
		(i) $(A + B * C / D - E + F / G / (H + I))$	
		(ii) $(A+B)*C+D/(B+A*C)+D$	
	(c)	Explain Difference between Stack and Queue.	02
Q.3	(a)	Explain following:	06
		(1) DQUEUE (11) Priority Queue	
	(h)	(III) Clicular Queue. Write the implementation procedure of basic primitive operations of	05
	(0)	the stack using:	03
		(i) Linear array (ii) linked list.	
	(c)	Consider the following arithmetic expression P, written in postfix	03
		notation. Translate it in infix notation and evaluate.	
		P: 12, 7, 3, -, /, 2, 1, 5, +, *, +	
03	(9)	UK What is Hashing? Explain various Hashing Eurotions	05
Q.5	(a) (b)	Write the implementation procedure of basic primitive operations of	05
	(~)	the Queue using:	
		(i) Linear array (ii) linked list.	
	(c)	Discuss advantages and disadvantages of linked list over array.	04
0.4	(a)	Explain Sequential Files and Indexed Sequential Files Structures	08
<u>د</u>	(b)	Explain the Preorder, Inorder and Postorder traversal techniques of the	06
	< <i>/</i>	binary tree with suitable example.	
		OR	
Q.4	(a)	Explain the terms: File, Field, Record, Database, Key.	06

1

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	(b)	Which are the basic traversing techniques of the Graph? Write the algorithm of any one of them.	08
Q.5	(a)	Construct the AVL search tree by inserting the following elements in the order of their occurrence. 64, 1, 44, 26, 13, 110, 98, 85	06
	(b)	Discuss following with reference to graphs.	08
		(i) Directed graph (ii) Undirected graph (iii) Degree of vertex (iv)Null graph	
05	(a)	OR Evaluin matrix and linked list representation of a graph	07
Q.5	(a) (b)	Explain matrix and miked list representation of a graph	06 08
	(D)	Discuss following with reference to trees.	
		(i) Height of the tree (ii) Binary tree (iii) Strictly binary tree	
		(iv) Sibling	
