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Code No. : 6205

FACULTY OF ENGINEERING

B.E. 2/4 (CSE) I Semester (Suppl.) Examination, July 2010

DATA STRUCTURES

Time: 3 Hours] [Max. Marks: 75

*Note: 1) Answer **all** questions from Part – A.*
*2) Answer **any Five** questions from Part – **B**.*

PART – A 25

1. Consider an array A [–10..30) of float values and assuming float values occupy 2 cells each and array A begins at address 100. What is the address of element A [20] ?

2. What is the asymptotic time complexity of the algorithm to multiply the matrices of size m×n and n×p ?

3. Write a recursive function to reverse elements of queue using the que operations – in Sh – ( ), delete ( ) and Is Empty ( ) ?

4. What is the disadvantages of using linear proving technique to resolve collisions in hash table ?

5. Construct a Binary tree for the folowing Inorder and pre-order listings.

Inorder :	b	e	a	d	f	c
Pre-order:	a	b	e	c	d	f

6. Find the minimum number of Nodes in an AVL tree of height four.

7. In quick sort Implementation what is the advantage of selecting pivot value from middle of the list rather than from one of the ends ?

8. What is the time complexity of deleting maximum element from max. heap ?

9. What is the time complexity of DFS traversal as an n-vertex simple graph that is represented with adjacent matrix structure ?

10. Would you use adjacency list or adjacency matrix to represent a graph with 10,000 vertices and 20,000,000 edges. Justify your answer.

PART – B (5×10=50 Marks)

11. a) Write a function to convert a given singly linked list to double linked list.

b) Write a function to reverse elements of a singly linked list.

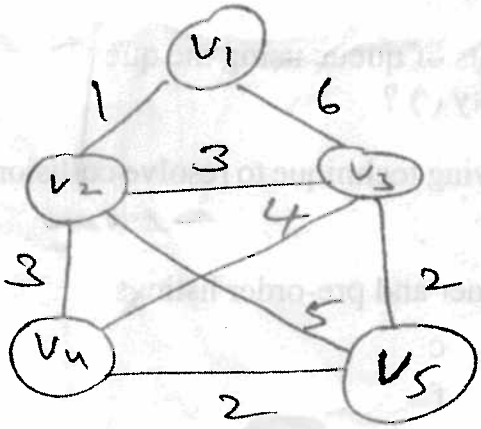
12. Declare two queues of varying length in a single array. Write functions to insert and delete from these queues.

13. Given the initial array with values 10,20,30,40,50,60,70,80,90. Draw the complete binary tree corresponding to the array. Trace the construction phase of heap sort (to build max. heap) by drawing complete binary tree after each rebuild step.

14. a) Write a non-recursive function to transverse binary tree in pre-order.

b) Define a B-Tree.

15. Show how Dijustra's algorithm works on the following graph with source vertices as V_1



16. a) Insert the following keys into a hash table of size 7. Use the hash function K % 7 and linear proving to resolve collisions 21,35,22,37,27,38.

a) How many comparisions are necessary to look up the following keys. 27,35,38

17. Write short notes on :

a) Simulating pointers

b) True compression

c) Graph search methods.