B. E. Third Semester (Computer Technology) / SoE – 2014 – 15 Examination

Course Code : CT 1203 / CT 203   **Course Name : Data Structure**

Time : 3 Hours]   [Max. Marks : 60

Instructions to Candidates :—
   (1)   Due credit will be given to neatness and adequate dimensions.
   (2)   Assume suitable data wherever necessary.
   (3)   Illustrate your answers wherever necessary with the help of neat sketches.

1.   (A)   (A1) Explain various asymptotic notations with examples.   6

              (A2) What is ADT ?   2

              (A3) Write a program for computing sum of array containing n elements.
                                                                                                                2

OR

              (B1) Write a program to compute factorial of a positive integer n.
                                                                                                                6

              (B2) State various types of data structures.   2

              (B3) State best – case and worst – case time complexity of binary search.
                                                                                                                2

2.   (A)   (A1) Explain different hashing techniques with example.   6

              (A2) What is interpolation search.   2

              (A3) Compare linear Vs binary search.   2

OR

              (B1) Explain various collision handling techniques with example.   6

		(B2) Explain heap sort.	2
	(B3)	What is external sorting ?	2

3.	(A1)	Write a program for implementation of stack (using pointers) with basic operation performed on it.	6
	(A2)	State various applications of stack.	2
	(A3)	What is multiple stacks ?	2

OR

	(B1)	Write a program for queue implementation (using pointers) with basic operations performed on it.	6
	(B2)	State various applications of queue.	2
	(B3)	What is priority queue?	2

4.	(A1)	Write a program to implement singly linked list using pointers.	6
	(A2)	Compare singly linked list Vs Doubly linked list.	2
	(A3)	Compare singly linked list Vs Circular linked list.	2

OR

	(B1)	Write a program to implement doubly linked list using pointers.	6
	(B2)	State applications of linked list.	2
	(B3)	Explain polynomial representation using linked list with example.	2

5.	(A1)	Write algorithms for basic tree traversals.	6
	(A2)	What is threaded storage representation ?	2
	(A3)	State applications of tree.	2

OR

	(B1)	Write algorithm for insertion in AVL tree.	6

(B2) What is B – tree ? Give example. 2

(B3) What is B + tree ? Give example. 2

6. (A1) Write algorithm to find minimum spanning tree for graph. 6

(A2) State applications of graph. 2

(A3) What is topological sort ? Give example. 2

OR

(B1) Write algorithm for shortest paths for graph. 6

(B2) What is breadth first search ? Give example. 2

(B3) What is depth first search ? Give example. 2