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BICS-007

00810

B.Tech. COMPUTER SCIENCE & ENGINEERING (BTCSVI)

Term-End Examination

June, 2013

BICS-007 : DATA STRUCTURES

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any seven** questions. Assume suitable missing data, if any.*

1. (a) Convert the following infix expression to postfix expression using STACK as a underlying data structure. 5

   A* (B/C)* D+E

   (b) Describe the behaviour of the quick sort algorithm when the input is already sorted. 5

2. (a) Consider the following array. Show the content of the array after applying selection sort. 5

   array : 50, 65, 20, 30, 15, 75

   (b) A 2D array LIST [4] [6] is stored in row major order with base address 200 and width 1. Calculate the address of element LIST [2] [4]. 5

3. (a) Define circular queue and write its applications. 5

(b) Write the uses of symbol table with suitable examples. 5

4. (a) Write Fluery's algorithm/any other algorithm that can be applied in searches for both Euler circuits and paths. 5

(b) Write the characteristics of a good algorithm with suitable examples. 5

5. (a) An undirected graph has a "Hamiltorian cycle" – Justify your answer. 5

(b) Write an algorithm to insert an item in mid of a singly linked list. 5

6. (a) Write an algorithm for sequential search and also write the average and worst case time complexity for it. 5

(b) Define Binary tree. Create a Binary tree with following inputs. 5

10, 15, 12, 7, 8, 18, 6, 20

7. (a) Explain an efficient way of storing a sparse matrix in memory. 5

(b) Define heap. What are the minimum and maximum number of elements in a heap of height h ? 5

8. (a) Write Merge sort algorithm and also find the average and worst case time complexity for it. 5

(b) Write the advantages and disadvantages of chaining and Re-hashing technique in Hash table organization. 5

9. (a) What is queue ? Write its applications. 5

(b) Compare singly linked list and doubly linked with examples. 5

10. Write short notes on **any two** : 5x2=10

(a) Threaded binary tree

(b) Planner graph

(c) Representation of sets using list