

SYMBIOSIS INTERNATIONAL UNIVERSITY

(Established under Section 3 of the UGC Act, 1956 vide notification No. F.9-12/2001-U.3 of the Government of India)
Accredited by NAAC with 'A' grade



Name of the Institute: SIT

Programme Name: B.Tech.

Batch: 2011-15

Programme Code: 070121

Semester: III

Course Name: Data Structures (CS & IT)

Course Code: 0701211304, 0701213304

Maximum Marks: 60

Date: 3/12/2013

Time: 01.30 PM to 04.00 PM

Day: Tuesday

Instructions:

1. Que.1. is compulsory.
2. Neat diagrams must be drawn wherever necessary.
3. Figures to the right indicate full marks.

PART-A

- Q.1
- | | | |
|----|--|---|
| a. | Construct a binary tree whose nodes inorder and preorder are given as follows
Inorder: 10,15,17,18,20,25,30,35,38,40,50
Preorder: 20,15,10,18,17,30,25,40,35,38,50 | 3 |
| b. | Define Data Structure, Data, and Data Object. | 3 |
| c. | Show the various passes of bubble sort on an unsorted list
11,15,2,13,6 | 4 |
| d. | Explain Binary Search with example. | 3 |
| e. | Convert into prefix
a. $A+(B*C-(D/E^F)*G)*H$
b. $(A*B+(C/D))-F$ | 2 |
| f. | What is static memory and dynamic memory allocation? | 3 |
| g. | Consider the following specification of a graph G
$V(G)=\{1,2,3,4\}$
$E(G)=\{(1,2),(1,3),(3,3),(3,4),(4,1)\}$
a. Draw an undirected graph.
b. Draw its adjacency matrix. | 3 |

PART B

- a. What is call by value and call by reference? Explain with one example. 5
- b. Write 'C' function for simple transpose of sparse matrix 5
- a. What are stacks? How can stacks be used to check whether an expression is correctly paranthized or not .For eg(()) is well formed but (() or)() is not. 7
- b. Compare doubly linked list and circular linked list. 4
- a. Write a complete program in C to create a singly linked list 8
- a. Define hashing. Describe any 2 commonly used functions. Describe one method of collision resolution. 6
- b. A 25×4 matrix integer array DATA is stored in memory in 'row-major-order'. If base address is 200 and $w=4$ words per memory cell. Calculate the address of DATA [12, 3]. 4
- OR**
- a. What is Priority Queue? Write a complete 'C' program to implement it. 8
- b. Differentiate between linear and circular queue. 2