M. SC. (Computer Science) SEM – I (Choice Based Credit & Grade System) : WINTER - 2018

SUBJECT : ADVANCED DATA STRUCTURES

Day : Saturday
Date : 13/10/2018

W-2018-1042

Time : 03.00 PM TO 06.00 PM
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Define stack as an ADT. Write a code in C to implement stack using linked list. **[15]**

OR

What are different types of list? Write a C code to implement doubly linked list. **[15]**

Q.2 **A)** Answer **ANY ONE** of the following: **[08]**

a) What is hashing? Also explain hash table.

b) Elaborate an AVL tree with example.

B) Answer **ANY ONE** of the following: **[07]**

a) What is minimum cost spanning tree? Illustrate Prim's algorithm with example.

b) Sort the following elements using merge sort technique. Also write stepwise evaluation: 10, 7, 19, 28, 5, 33, 15, 9 and 12.

Q.3 Answer **ANY THREE** of the following: **[15]**

a) Explain threaded binary tree with example.

b) What is directed graph? Give its applications.

c) Explain BFS with example.

d) Write a C code to show the given expression contains balanced parentheses.

e) Write a C code to implement linear queue.

Q.4 Write short notes on **ANY THREE** of the following: **[15]**

a) Sequence

b) Adjacency matrix

c) n-ary trees

d) Scatter table

e) Dynamic array

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