Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

III SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)

MAKEUP EXAMINATIONS, DEC 2015/JAN 2016

SUBJECT: DATA STRUCTURES USING C [CSE 205]

(Old Syllabus)

REVISED CREDIT SYSTEM

Time: 3 Hours Date: 03-01-2016 MAX. MARKS: 50

Instructions to Candidates:

- Answer any ***five*** full questions.
- Missing data, if any, may be suitably assumed.

1A. Describe the logic to implement circular queue operations using two stacks. Write "C" code to implement your logic using static arrays. Your code should check queue empty and full conditions.

1B. Give the DFS traversal order for the graph given in Fig1B.

1C. Write a recursive function to return the N th Fibonacci number. Use this function in the main to print N th Fibonacci number. (4+3+3)

2A. Write a function to reverse a singly linked list without using another list.

2B. Construct a Binary search tree in the order of given input: F M D C E L and display the tree contents using post-order traversal.

2C. With an example for each, show the types of rotations used in converting non AVL tree to AVL tree. (3+3+4)

3A. Write a function to insert at front and delete from rear using circular doubly linked list.

3B. Write a function to add two long integer numbers represented using singly linked list.

3C. Write and describe all pair shortest algorithm. Also trace the same for the graph given in Fig3C. (3+3+4)

4A. Convert the expression 1+5*3-7/2^4 to its equivalent prefix expression and show the evaluation process using stack content.

4B. Describe any two overflow handling methods in hashing.

4C. Sort the given elements 65, 70, 75, 80, 85, 60, 55, 50, 45 in ascending order using heap sort technique by showing intermediate steps. (3+3+4)

5A. Given two doubly linked lists (L1, L2) representing 2 sets, create new list c3 (using insert rear method) which is the union of these two lists.

5B. With an example, explain any two methods to represent a graph.

5C. Write a recursive function to search for an element using binary search method where the function returns 1 if the element is found else -1. (4+3+3)

6A. What is complete binary tree? How to you represent such a tree using arrays. Explain with example.

6B. Give a function to find the sum of two numbers. Using the step count calculate its time complexity.

6C. Write a function to insert a node after the specified node and to delete a node before the specified node using circular singly linked list with header node. (3+3+4)

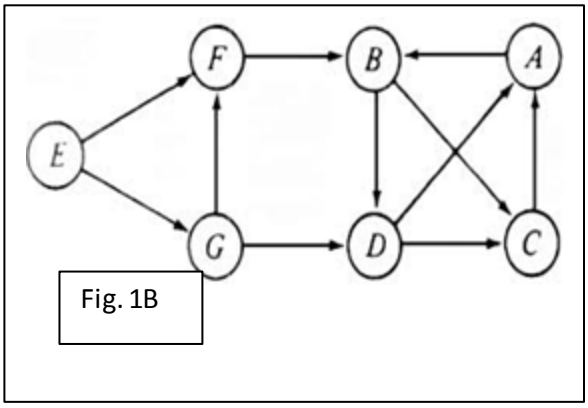

Fig. 1B

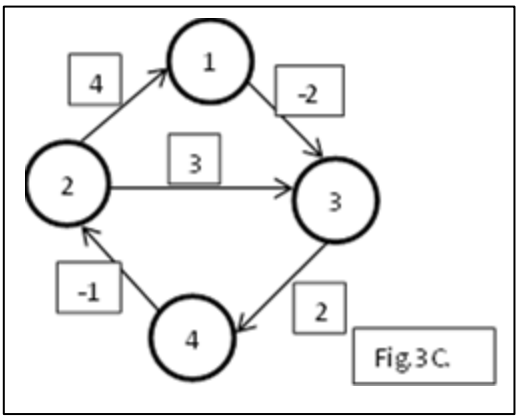

Fig.3C.