BHARATI VIDYAPEETH'S
INSTITUTE OF COMPUTER APPLICATIONS & MANAGEMENT (BVICAM)
(Affiliated to Guru Gobind Singh Indraprastha University, Approved by AICTE, New Delhi)
A-4, Paschim Vihar, Rohtak Road, New Delhi-110063, Visit us at: http://www.bvicam.in/

Course Code: MCA-102 Course Name: Data and File Structures

Assignment - 1

(Based on Unit - I & II)

Marks

Q1. Assume, you are given two polynomials, P1: $3x^3 + 2x^2 - 2x + 7$ and P2: $5x^3 - 3x^2 - 2$. Design an appropriate data structure and write necessary functions which perform the addition of the given polynomials. (4)

Q2. Design a data structure to represent two stacks in an array of size n. Write functions for push() and pop() operations to insert and delete element from stack *i*, where *0* <= *i* <= *1*. The functions should be able to add elements to the stacks as long as there are less than *n* elements in both stacks together. (4)

Q3. Identify the most suitable notation to represent a mathematical expression in computers? Given the following arithmetic expression in infix notation: (4)

12 / (7 – 3) + 2 * (3 + 8) – 6

Translate this expression into postfix notation and then evaluate it.

Q4. Discuss different types of rotations required to construct an AVL tree. Construct an AVL tree by inserting all the names of months (January … December). (4)

Q5. Compare B-tree with B^+-tree. Identify the situations when you might prefer to use B^+-tree instead of a B^*-tree? Construct a B-Tree of order 5 for following numbers: 3, 14, 7, 1, 8, 5, 11, 17, 13, 6, 23, 12, 20, 26, 4, 16, 18, 24, 25, 19. (4)