

MCA (Revised) / BCA (Revised)

Term-End Examination

December, 2015

MCS-021 : DATA AND FILE STRUCTURES

Time : 3 hours

Maximum Marks : 100

(Weightage 75%)

Note : *Question number 1 is compulsory. Attempt any three questions from the rest. All algorithms should be written nearer to 'C' language.*

1. (a) Write an algorithm that accepts two polynomials as input and prints the resultant polynomial due to the addition of input polynomials. 10
- (b) What is a stack ? Explain the various operations of stack with an example for each operation. 10
- (c) Write an algorithm for each of the following : 10
 - (i) Depth first search
 - (ii) Breadth first search
- (d) What is a Splay Tree ? How does it differ from a Tree ? 10

2. (a) Write an algorithm for the implementation of a doubly linked list. 10
- (b) Write an algorithm for the implementation of a stack. 10
3. (a) Write a non-recursive algorithm for inorder traversal of a binary tree. 10
- (b) Define B-tree. Give an example of a B-tree. 10
4. (a) Explain Kruskal's algorithm with an example. 10
- (b) What are red-black trees ? Explain the properties of a red-black tree. 10
5. (a) Explain QuickSort algorithm. Trace the algorithm for the following set of data : 10
25, 0, 8, 78, 6, 34, 56, 90, 100
- (b) Explain the merits and demerits of various file organisations. 10
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