

7. Explain the following with examples :
- (a) Evaluation of postfix expressions using stacks. 8
 - (b) Representation of queues using linked lists. 8

UNIT – IV

8. (a) What is AVL Tree ? How is it used and useful ? Explain it with suitable examples and C++ codes. 8
- (b) Discuss minimal spanning tree algorithms with examples and C++ codes. 8
9. Explain the following with examples :
- (a) Threaded binary tree and its advantages. 8
 - (b) Comparison of Prim's and Kruskal's algorithms. 8

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**MCA 2nd Semester CBCS Scheme
w.e.f. 2016-17 Examination – May, 2018**

DATA STRUCTURES USING C++

Paper : 16MCA32C1

Time : Three Hours]

[Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. 1 which is compulsory. Attempt four more questions selecting one question from each Unit.

1. Answer the following questions in briefly : 8 × 2 = 16

- (a) Write characteristics of good algorithm.
- (b) Explain advantages of hashing.
- (c) Describe *two* advantages of recursive algorithms.

- (d) What is B-trees ?
- (e) Explain advantages of sparse trees.
- (f) Describe complexity of binary tree.
- (g) Write the use and advantages of linked lists.
- (h) Discuss advantages of conversion ; infix notation to pre-fix notation.

UNIT – I

- 2. (a) Define structured program How is it useful and used in C++ ? Discuss examples. 8
- (b) Discuss uses and advantages of top down approach to algorithm with suitable examples. 8
- 3. Explain the following briefly with suitable examples :
 - (a) Time and space complexity algorithm 8
 - (b) Analysis of an algorithm 8

UNIT – II

- 4. (a) What is heap sort ? How is it useful and used ? Explain its complexity also with an example and C++ code segments. 8
- (b) Discuss applications of arrays with examples and C++ code segments. 8
- 5. Describe the following with examples :
 - (a) Hashing techniques and their relative merits. 8
 - (b) Binary search trees and their *Two* major applications. 8

UNIT – III

- 6. (a) What doubly linked list ? How is it useful and used ? Discuss with examples and C++ code segments. 8
- (b) Explain *three* major applications of stack through suitable examples and C++ code segments. 8