

Roll No. ....

(07/21-II)

**5392**

**B.C.A. EXAMINATION**

(For Batch 2011 & Onwards)

(Fourth Semester)

**DATA STRUCTURES-II**

**BCA-242**

Time : *Three Hours*

*Maximum Marks : 80*

**Note :** Q. No. 1 is compulsory. In addition, attempt *four* more questions by selecting *one* question from each Unit. All questions carry equal marks.

1. Explain the following concept/topics with example, if any (2 marks each) :

- (a) Binary tree
- (b) Binary search tree
- (c) All trees are graphs. Comment

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P.T.O.

- (d) Applications of graph
  - (e) Internal sorting
  - (f) Bog O notation
  - (g) Applications of files
  - (h) Hash function.
- 8×2=16

### Unit I

2. What do you understand by an m-way search tree ? Discuss the insertion and deletion of nodes into/from an m-way search tree. 16
3. Write Huffman's algorithm and explain the working. 16

### Unit II

4. Describe applications of graphs and various operations that can be performed on graphs. Discuss the traversal operation in detail. 16
5. Describe shortest path algorithm given by Edgar Dijkstra with an illustration. 16

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### Unit III

6. Justify the requirement of sorting operation on arrays. Explain Heap sort algorithm with small example data. 16

7. Compare and contrast various sorting algorithms on the basis of their time and space complexity. 16

### Unit IV

8. Discuss various applications of files. Also describe the file attributes, file types, and operations performed of files. 16

9. Discuss advantages and disadvantages of organizing files in sequential, index-sequential and random access modes. 16

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