**BCA 3rd Semester (Full & Re-appear)**

**Examination, December-2024**

**DATA STRUCTURE-I**

**Paper : BCA-202**

*Time allowed : 3 hours]* *[Maximum marks : 80*

***Note :*** *Attempt **five** questions in all. **Question No. 1 will be compulsory.** In addition to compulsory question, student will have to attempt **four** more questions selecting **one** question from each unit. All questions carry equal marks.*

1. Explain the following : 8×2=16

   (a) Data Structure

   (b) String

   (c) Parallel arrays

   (d) Threaded lists

   (e) Deques

   (f) Uses of trees in data structure

   (g) Graph theory

   (h) Define Tree.





**Unit–I**

2. Explain the following in detail : 2×8=16

   (a) Categories of Data structures

   (b) Applications of data structures

3. Explain the concept of storing strings, string operations and Pattern matching algorithms in detail. 16

**Unit–II**

4. What is Linked list? What are the advantages and disadvantages of representing a group of items as an array versus a linear linked list? 16

5. Explain the following in detail :

   (a) Linear arrays and Representation of linear array in memory 8

   (b) Header linked list and circular linked list with example. 8



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## Unit–III

6. (a) What is Stack? Explain the different operations on stacks in detail. 8

(b) Explain the applications of stack in detail. 8

7. What is Queues? Explain the concept of priority queues in detail. Also explain the applications of queues in detail. 16

## Unit–IV

8. Explain the following in detail : 2×8=16

(a) Traversing binary trees

(b) Traversal algorithms using stacks

9. What is Graph? Explain Sequential and Linked representation of graphs in detail. 16



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