

GSM/D-22**1168****DATA STRUCTURES****BCA-232**

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Define Big O notation. 4
- (b) Define Linked List and its applications. 4
- (c) Explain Stack and Queue and its applications. 4
- (d) Difference between Tree and Graph. 4

Unit I

2. (a) What are the various applications of data structure ? 8
- (b) Write various string operations. 8
3. (a) What is data structure ? Explain various types of data structure in detail. 8
- (b) Explain, what do you mean by complexity of algorithm ? How is it calculated ? Explain with suitable example. 8

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UNIT II

4. Differentiate between row major and column major array index notation. How is index calculated in both ? 16
5. What do you mean by linked list ? Write a function to insert and delete a node in linked list. 16

Unit III

6. Define stack. How is it different from queue ? Write an algorithm to implement stack using linked list. 16
7. Define circular queue. Write algorithm to insert an element in a circular queue. 16

Unit IV

8. List the types of binary search trees. Explain insertion and deletion operation on a binary search tree. 16
9. Define Graph. Explain sequential and linked representation of graphs by giving suitable example. 16