

Exam. Code : 103204

Subject Code : 1099

B.A./B.Sc. Semester—IV

COMPUTER SCIENCE

(Data Structures and Programming Language Using C++)

Time Allowed—3 Hours]

[Maximum Marks—75

Note :— (1) Attempt any **FIVE** questions in all, selecting at least **ONE** from each of Units I, II and III.

(2) All questions carry equal marks.

UNIT—I

1. (a) What is the difference between data and data-structures ? Explain various operations on data-structures. 2+5
- (b) Draw difference between Linear and Multidimensional arrays in detail. 8
2. (a) Define algorithm. How do you measure algorithm complexity ? Explain through example. 2+5
- (b) What is linked list ? How is it represented in memory ? Explain any two operations. 2+6
3. (a) Compare and contrast linked lists and array in detail. 8
- (b) Define algorithm. Explain the term time-space trade off between algorithms. Justify through example. 7

UNIT—II

4. (a) How stacks are implemented using arrays and linked lists ? Explain through application of both. 4+4
(b) Define queue. Why priority queues are maintained ? Explain the 'dequeue' operation. 2+2+3
5. (a) How an arithmetic expression is solved through stacks ? Explain through example. 4+3
(b) Compare quick sort and merge sort in detail. 4+4
6. (a) How an infix expression is converted to Polish notation ? Explain through example. 7
(b) Write a procedure to perform binary search along with example. 8

UNIT—III

7. (a) How objects and classes are defined and accessed in object-oriented programming ? 8
(b) Define Inheritance. Explain various levels of inheritance and associated problems with it. 7
8. (a) What is overloading ? How do you overload an operator ? Explain. 2+6
(b) How class-hierarchies are defined and accessed in C++ ? Explain. 7