Exam. Code : 103204

Subject Code : 1119

B.A./B.Sc. 4th Semester

COMPUTER SCIENCE

(Data Structures & Programming Language Using C++)

Time Allowed—Three Hours]   [Maximum Marks—75

Note :— (1) Attempt **FIVE** questions in all by selecting at least **ONE** from each unit.

      (2) All questions carry equal marks.

      (3) Use of non-programmable calculator is allowed.

UNIT—I

1. (a) What is data-structure ? Which are the common operations performed on data-structures ? Explain.   2+6

    (b) What is time-space trade-off ? Explain the time-space trade-off of an algorithm in detail with example.   7

2. (a) What is complexity ? How do you measure the algorithm complexity ? Explain through notations.   2+6

    (b) What is array ? How arrays are stored in memory ? Explain multidimensional array for C++.   2+5

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UNIT—II

3. (a) What is linked list ? Which are the advantages of using linked-lists over arrays ? Explain through C++. 2+6

   (b) Define stack. How stacks are implemented ? Explain. 2+5

4. (a) What is polish notation ? Explain how is it evaluated by giving example. 2+6

   (b) Define sorting. How a list is sorted through quick sort ? 2+5

UNIT—III

5. (a) What is queue structure ? How queues are implemented using arrays ? Explain. 2+6

   (b) How priorities of queues are defined and accessed ? Also explain the deques with example. 4+3

6. How searching is performed through linear and binary search techniques ? Explain through example. 15

UNIT—IV

7. (a) Why a language is called object-oriented ? Explain the concept of object and classes with example. 3+5

   (b) What is overloading ? How it is performed in C++ ? 7

8. (a) Explain the concept of inheritance in C++. 8

   (b) Explain polymorphism along with its applications. 7