B.Sc. Part-II (Semester-III) Examination

COMPUTER SCIENCE/COMPUTER APPL./INFORMATION TECHNOLOGY (NEW)

(Data Structure & C++)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) **ALL** questions are compulsory.

(2) Assume suitable data wherever necessary.

(3) Question No. **1** carries **8** marks and all other questions carry **12** marks each.

1. (A) Fill in the blanks : 2

(i) Array is an example of _____ data structure.

(ii) A function can return a value to the calling function using the _____ statement.

(iii) _____ are the basic run-time entities in an object-oriented system.

(iv) In _____ search method, element must be in sorted order.

(B) Choose the correct alternative from the following : 2

(i) The root element is processed at the last, so the name is given _____ traversing.

(a) Inorder (b) Preorder

(c) Postorder (d) None

(ii) Queue is also called as _____.

(a) LIFO (b) FIFO

(c) FILO (d) LILO

(iii) Which of the following operator is overloaded for object cout ?

(a) >> (b) <<

(c) + (d) =

(iv) Which of the following is not a form of inheritance ?

(a) Multilevel (b) Hierarchical

(c) Hybrid (d) Base class

(C) Answer in **ONE** sentence each : 4

(i) What is pure virtual function ?

(ii) What is merging ?

(iii) What is sibling ?

(iv) What do you mean by sorting ?

2. (A) What is stack ? Explain representation of stack in memory. 6

(B) Explain primitive and non-primitive data structure with suitable example. 6

OR

3. (A) What is linear array ? Write an algorithm for traversing a linear array. 6

(B) What is data structure ? Explain various operations performed on it. 6

4. (A) What is linked list ? Explain the representation of linked list in memory. 6

   (B) What is Queue ? Write an algorithm to insert an element into a queue. 6

OR

5. (A) What is priority queue ? How priority queue is represented in one way list ? 6

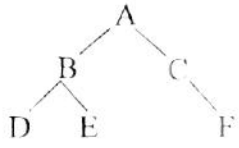
   (B) Explain : 6

   (i) circular linked list

   (ii) doubly linked list.

6. (A) Explain selection sort with a suitable example. 6

   (B) What is meant by traversing a binary tree ? Write preorder, inorder, postorder traversing of the following binary tree 6



OR

7. (A) What is searching ? Explain the linear search technique with suitable example. 6

   (B) Explain Bubble Sort method with suitable example. 6

8. (A) What are the advantages and application of OOPS ? (Object Oriented Programming) 6

   (B) Explain the following operators with examples of each : 6

   (i) cin

   (ii) endl

   (iii) new

OR

9. (A) Explain the program structure of C++ in detail with examples. 6

   (B) How to define and declare class ? Explain with suitable example. 6

10. (A) What is default argument ? How to use default argument in C++ ? Explain with suitable example. 6

    (B) What is constructor ? Explain parameterized constructor with example. 6

OR

11. (A) What is friend function ? What are the special characteristics of friend function ? 6

    (B) Explain pointer to object with suitable example. 6

12. (A) What is inheritance ? Explain multiple inheritance with suitable example. 6

    (B) What is operator overloading ? How to define operator overloading ? Explain it. 6

OR

13. (A) Write a program to overload unary (–) operator. 8

    (B) What is virtual base classes ? Explain. 4