B.Sc. (Part—II) Semester–III Examination

COMPUTER SCIENCE/COMPUTER APPLICATION/INFORMATION TECHNOLOGY

(Data Structure and C++)

(New)

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 :

(i) The variables declared inside a class are known as _____.

(ii) The operator _____ extracts or takes the values from keyboard and assigns it to a variable on its right.

(iii) Find the location of element from data structure is called _____.

(iv) In QUEUE, the element is added on _____. 2

(B) Choose the correct alternatives from the following :

(i) The last node holds the _____ value indicating that it is the last node in the linked list.

(a) NULL (b) 1

(c) N (d) N/2

(ii) The level of Root node is always :

(a) 0 (b) 1

(c) N (d) 2

(iii) A special member function which is invoked automatically when an object is to be destroyed is called _____.

(a) Constructor (b) Destructor

(c) Copy constructor (d) None

(iv) Which among the following is not an access specifier ?

(a) Public (b) Private

(c) Protected (d) Friend 2

(C) Answer in **one** sentence :

(i) What is constructor ?

(ii) What is derived class ?

(iii) What is stack ?

(iv) What is searching ? 4

2. (A) What is data structure ? Explain types of data structure. 6

(B) What is linear array ? Write an algorithm for inserting an element into linear array. 6

OR

3. (A) Explain primitive and non primitive data structure with suitable example. 6

(B) What is stack ? Explain the different operations performed on STACK. 6

4. (A) How an element is inserted into the QUEUE ? Explain. 6

(B) How many types of linked list ? Explain circular linked list with examples. 6

OR

5. (A) Explain :

(i) Priority Queue (ii) Dequeue 6

(B) Explain doubly linked list with suitable example. 6

6. (A) Explain sequential representation of Binary trees with suitable example. 6

(B) Explain quick sort with suitable example. 6

OR

7. (A) Write an algorithm for preorder traversal of binary tree. 6

(B) Explain merge sort technique with suitable example. 6

8. (A) Explain the following operators :

(i) cin (ii) setw (iii) endl 6

(B) Explain the structure of C++ program with suitable diagram. 6

OR

9. (A) Explain :

(i) Data Encapsulation.

(ii) Data Abstraction with examples. 6

(B) How the member functions are defined outside the class ? Explain it. 6

10. (A) Write a program to overload add( ) function in C++. 6

(B) Explain this pointer with suitable example. 6

OR

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

(B) What is array of objects ? Explain with suitable example. 6

12. (A) Write a program to overload binary operator '+'. 6

(B) What is Abstract base class ? Explain. 6

OR

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

(B) What is operating overloading ? How to define operator overloading ? 6