III Semester B.A./B.Sc. Examination, November/December 2018
(Repeaters) (2014 -15 Only)
(Semester Scheme)
COMPUTER SCIENCE – III
Data Structure and Algorithms

Time : 3 Hours   Max. Marks : 70

Instruction : *Answer all Sections.*

SECTION – A

I. Answer **any ten** questions. **Each** question carries **2** marks.   (10×2=20)

1) Differentiate between linear and non-linear data structure.

2) Define Algorithm.

3) Define the term string and substring.

4) What are the two methods of representing 2D arrays in memory ?

5) List out common operations on data structures.

6) Define a stack ? Name two operations of stack.

7) Mention two advantages of Binary search.

8) List two applications of linked list.

9) Convert the following infix expression to postfix (A+B)/ (P – Q) * C/D.

10) What is pre-order traversal of Binary Tree ?

11) Define a graph. Give example.

12) Mention two applications of queues.

SECTION – B

II. Answer the following. **Each** question carries **10** marks.   (5×10=50)

13) a) Explain string operations with 10 examples.   10

OR

b) Explain algorithms for deletion and Insertion of elements into an array
with an example.   10

P.T.O.

14) a) Explain Binary search algorithm with an example. Also write a C function to implement the same.   **10**

   OR

   b) Describe the row-major and column major order of an array representation in memory.   **10**

15) a) Write an algorithm to implement stack operations.   **10**

   OR

   b) Write a note on various types of linked lists.   **10**

16) a) Write C program to implement linear queue. Also write functions for queue full and queue empty conditions.   **10**

   OR

   b) Explain the various terminologies associated with trees.   **10**

17) a) i) Explain Depth First search Traversal of Graph with example.   **5**
       ii) Explain deletion operation in Binary search Tree.   **5**

       OR

   b) i) Explain Infix,Prefix and postfix notations with examples.   **5**

       ii) Mention any four applications of stack.   **5**