K15U 0332

Reg. No. : .....

Name : .....

III Semester B.Sc. Degree (CCSS – 2014 Admn. – Regular) Examination, November 2015
CORE COURSE IN COMPUTER SCIENCE
3B04 CSC : Data Structure

Time : 3 Hours

Max. Marks : 40

SECTION – A

1. **One** word answer : **(8×0.5=4)**

   a) A data structure is said to be _____ if they have fixed size.

   b) _____ is the operation of accessing each element of a data structure exactly once.

   c) The _____ of a program is the amount of memory it needs to run to completion.

   d) The operation of inserting element into a stack is called _____

   e) The insertions in a queue takes place at _____ end.

   f) The situation of deleting element from empty data structure is called _____

   g) The level of a root node in a tree is _____

   h) The depth of a binary tree that has 4 levels is _____

SECTION – B

Write short notes on **any seven** of the following questions : **(7×2=14)**

2. What is big O notation ?

3. Compare linear and non-linear data structure.

4. What do you mean by the complexity of algorithm ?

5. What are the applications of stack ?

P.T.O.

6. Explain the array representation of queues.
7. What are linked lists ?
8. What is garbage collection ?
9. Explain complete binary tree with example.
10. What is a sparse matrix ?
11. What are queues ?

SECTION – C

Answer **any four** of the following questions : (4×3=12

12. How can you represent two dimensional arrays in memory ?
13. Write an algorithm for binary search.
14. Write short notes on Dequeues.
15. Evaluate the postfix expression :

    12, 7, 3, –, /, 2, 1, 5, +, *, +
16. Explain how to insert elements in to a doubly linked list.
17. What are binary search trees ?

SECTION – D

Write an essay on **any two** of the following questions : (2×5=1

18. Explain the different binary tree traversal algorithms with examples.
19. Compare selection sort and insertion sort algorithms with examples.
20. Explain the algorithm for converting an infix expression to postfix expression. Convert the following infix expression to its postfix notation :

    A * (B + C ^ D) – E ^ F * (G/H).
21. Write a program to implement various stack operations.