US – 638

II Semester B.C.A. Degree Examination, May 2017
(F + R) (CBCS)
(2014-15 and Onwards)
COMPUTER SCIENCE
BCA – 203 : Data Structures

Time : 3 Hours Max. Marks : 70

***Instruction** : Answer **all** Sections.*

SECTION – A

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

1. What is linear data structure ? Give an example.
2. Define space and time complexities of an algorithm.
3. What is recursion ?
4. What is dynamic memory allocation ?
5. Define stack.
6. Compare linear search and binary search methods.
7. What is circular queue ?
8. Write the differences between stack and queue.
9. Give the node structure of a doubly linked list.
10. Define the terms :
    i) Binary tree.
    ii) Complete binary tree.
11. Mention the different ways of tree traversal.
12. Mention the graph traversal methods.

P.T.O.

SECTION – B

Answer **any five** questions. **Each** question carries **ten** marks. (5×10=50)

13. a) Explain various types of data structures. 6
    b) Briefly explain any four string handling functions. 4

14. a) Explain selection sort algorithm. 5
    b) Write an algorithm to delete an element from the array. 5

15. a) Define linked list. Mention the applications of the linked list. 5
    b) Write an algorithm for searching a node in the singly linked list. 5

16. a) Mention various applications of the stack. 5
    b) Evaluate the following postfix expression
    $95 + 36 * + 97 - 1$. 5

17. a) Write C functions to perform insertion and deletion operations of a queue. 5
    b) What is queue ? Mention its underflow and overflow conditions. 5

18. a) Briefly explain infix, prefix and postfix expressions. 5
    b) Convert the following infix expression into its equivalent postfix expression
    $(a + b) * (m/n) + (x + y)$. 5

19. a) Define the terms (a) Graph (b) Degree of a vertex. 4
    b) Write depth-first-search algorithm. 6

20. a) Define Binary search tree. Give an example. 4
    b) Briefly explain various tree traversal methods with suitable examples. 6