MS – 570

# II Semester B.C.A. Degree Examination, May 2016
## (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 Abstract Data Type ?
2. What is time complexity ?
3. Write an algorithm to traverse linear arrays.
4. Write C function to find the length of string without using built-in function.
5. What is circularly linked list ?
6. Mention any two applications of linked list.
7. How is stack represented in memory ?
8. Define recursion.
9. What is priority queue ?
10. What is adjacency matrix ? Give example.
11. Define graph.
12. Mention the different ways of tree traversal.

P.T.O.

## SECTION – B

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

13. a) Explain various data structure operations performed on non-primitive data structures. **6**

    b) Write a C program to copy one string into another without using built-in functions. **4**

14. a) Write a C program to implement selection sort. **6**

    b) Write an algorithm to delete an element from an array. **4**

15. a) Explain various types of linked lists. **5**

    b) Write an algorithm to insert a mode at the beginning of linked list. **5**

16. Write an algorithm to evaluate a valid postfix expression.

    Use the algorithm to evaluate the following postfix expression :

    6, 5, *, 3, 2, *,+, 8, 4, 1, – **10**

17. a) Write a C program to implement stack operations. **7**

    b) What is dequeue ? Explain. **3**

18. a) Write an algorithm to insert an element into circular queue. **6**

    b) Explain queue overflow and underflow. **4**

19. a) Explain sequential representation of graphs in memory. **4**

    b) Mention the types of graph traversal algorithms. Explain any one. **6**

20. a) List the properties of binary tree. **5**

    b) Construct binary tree given inorder and postorder traversals.

    Inorder : E A C K F H D B G

    Postorder : E C K A H B G D F.

    Also specify the pre-order traversal. **5**

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