II Semester B.C.A. Degree Examination, April/May 2015  
(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 10 of the following : (10×2=20)

1. What are linear data structures ? Name any two linear data structures.
2. Explain the abstract data types.
3. What is sparse matrix ?
4. Describe binary search technique.
5. What is garbage collection ?
6. What is dynamic memory allocation ?
7. What is stack overflow ? Write the difference between stack and a queue.
8. Define recursion.
9. What is dequeue ?
10. Explain circular queue with an example.
11. Differentiate between non-terminal node and a leaf node.
12. Define height of a binary tree.

SECTION – B

Answer any 5 of the following : (5×10=50)

13. a) Explain the classifications of data structures in detail.  
    b) Explain the pattern matching algorithm of strings.  

14. a) Describe the concept of linear search technique with an example.
    b) Write a program to sort N elements using selection sort.

P.T.O.
15. a) Explain various types of linked lists.  
   b) Write an algorithm to insert an element at the end of a linked list.

16. Write a program to insert, delete and display the elements of a circular queue using arrays.

17. a) Explain various types of queues.  
   b) Write a procedure to evaluate the given postfix expression.

18. a) Write recursive functions for tree traversals.  
   b) Define binary search tree. Give an example.

19. a) Explain various tree terminologies with a neat diagram.  
   b) Explain graph traversal in detail.

20. a) What are non-primitive data structures? Explain the operations on non-primitive data structures.  
   b) Demonstrate the working of insertion sort with an example.