

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)**

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|---|----------|
| 13. a) Explain the classifications of data structures in detail.        | <b>5</b> |
| b) Explain the pattern matching algorithm of strings.                   | <b>5</b> |
| 14. a) Describe the concept of linear search technique with an example. | <b>5</b> |
| b) Write a program to sort N elements using selection sort.             | <b>5</b> |

**P.T.O.**





15. a) Explain various types of linked lists. 5  
b) Write an algorithm to insert an element at the end of a linked list. 5
16. Write a program to insert, delete and display the elements of a circular queue using arrays. 10
17. a) Explain various types of queues. 5  
b) Write a procedure to evaluate the given postfix expression. 5
18. a) Write recursive functions for tree traversals. 6  
b) Define binary search tree. Give an example. 4
19. a) Explain various tree terminologies with a neat diagram. 5  
b) Explain graph traversal in detail. 5
20. a) What are non-primitive data structures ? Explain the operations on non-primitive data structures. 5  
b) Demonstrate the working of insertion sort with an example. 5
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## SECTION - B

(5x10=50)

a  
a  
a  
a

P.T.O.