SA – 908

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. **5**
    b) Explain the pattern matching algorithm of strings. **5**

14. a) Describe the concept of linear search technique with an example. **5**
    b) Write a program to sort N elements using selection sort. **5**

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**