



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.

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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 5
 $95 + 36 * + 97 - 1.$
- 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 5
 $(a + b) * (m/n) + (x + y).$
- 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

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