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II Semester B.C.A. Examination, May/June 2019
(CBCS - F+R) (2014-15 & onwards)

DATA STRUCTURES

BCA 203 : Data Structures

Time : 3 Hours Max Marks : 70

Instruction : *Answer* ***all*** *sections.*

SECTION - A

Answer **any 10** questions. **10x2=20**

1. Define data structures.

2. Define Time Complexity and Space Complexity.

3. Explain row major and column major representation of multi-dimensional arrays.

4. Define dynamic memory allocation.

5. Define Sorting. Mention the different sorting techniques.

6. What is searching ? Mention the types.

7. What are the advantages of Linked List over arrays.

8. Define sparse Matrix.

9. What is Stack ? Mention the application of Stack.

10. Define overflow in case of Queue.

11. What is a directed graph ? Give an example.

12. Write the difference between Tree and Binary Tree.

P.T.O.

SECTION - B

Answer **any 5** questions. **5x10=50**

13. (a) Explain the classification of data structures in detail. **5**

(b) Explain asymptotic notations with an example. **5**

14. (a) Write an algorithm to sort 'N' numbers using Bubble Sort. **5**

(b) Explain Binary search method. **5**

15. (a) Define Linked list. Explain various types of Linked list. **5**

(b) Write an algorithm to insert a node at the beginning of Linked list. **5**

16. (a) Write an algorithm for Push & Pop Operation of a Stack. **6**

(b) Write a C-Program to find GCD of two numbers using recursion. **4**

17. (a) Convert an infix expression 'Q'. Q=A+(B*C−D/E ↑ F)*G)*H to post fix expression. **6**

(b) Write a C-Program to perform Concatenation of 2 strings without using String Function. **4**

18. (a) What is a Queue ? Explain the operations performed on ordinary Queue. **6**

(b) Write an algorithm to insert an element to a Circular Queue. **4**

19. (a) Write Depth First Search algorithm to traverse a graph. **5**

(b) What is a graph ? What are the types of graph ? Explain. **5**

20. What is a tree ? Explain different tree traversal techniques with an algorithm. **10**

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