

This question paper contains 4+2 printed pages]

**BCA-204**

**B.C.A. (Second Year) EXAMINATION, 2018**

**DATA STRUCTURE USING C**

**Time allowed : Three Hours**

**Maximum Marks : 100**

**Part A (खण्ड 'अ') [Marks : 20]**

*Answer all questions (50 words each).*

*All questions carry equal marks.*

सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न का उत्तर 50 शब्दों से अधिक न हो। सभी प्रश्नों के अंक समान हैं।

**Part B (खण्ड 'ब') [Marks : 50]**

*Answer five questions (250 words each),*

*selecting one question from each Unit.*

*All questions carry equal marks.*

प्रत्येक इकाई से एक प्रश्न चुनते हुए, कुल पाँच प्रश्न कीजिए। प्रत्येक प्रश्न का उत्तर 250 शब्दों से अधिक न हो। सभी प्रश्नों के अंक समान हैं।

P.T.O.



**Part C (खण्ड 'स')**

[Marks : 30]

*Answer any two questions (300 words each).*

*All questions carry equal marks.*

कोई दो प्रश्न कीजिए। प्रत्येक प्रश्न का उत्तर 300 शब्दों से अधिक न हो। सभी प्रश्नों के अंक समान हैं।

**Part A**

**Unit I**

1. (i) What is double ended queue ?
- (ii) What is use of POST FIX Expression ?

**Unit II**

- (iii) Define Sparse Matrix.
- (iv) What is Realloc Operation ?

**Unit III**

- (v) Which Tree Traversal is simple to represent using recursion technique ?



(vi) Give *two* applications of Tree.

#### Unit IV

(vii) What is advantage of Orthogonal representation ?

(viii) Why is Reflexive Closure used ?

#### Unit V

(ix) In which situation is quick sort used ?

(x) In which situation is heap sort used ?

#### Part B

#### Unit I

2. Write a C program to reverse a stack using recursion.

*Or*

3. Write a program to check of expression is correctly parenthesized.



## Unit II

4. Write a program to delete alternate nodes of Linked List.

*Or*

5. Write a program to implement priority queue using doubly linked list.

## Unit III

6. Write a program to find largest value in each level of Binary Tree.

*Or*

7. Write a program to implement BST (Binary Search Tree).

## Unit IV

8. Write a program to Implement BFS.

*Or*

9. Write a program to Implement DFS.



## Unit V

10. Explain Heap Sort.

*Or*

11. What are key advantages of quick sort, Insertion sort and Merge sort ?

## Part C

### Unit I

12. Write a program to implement stack.

### Unit II

13. (a) Compare malloc and calloc.  
(b) Discuss application of linked list.

### Unit III

14. Write a program to implement post order traversal using non-recursive technique.



#### **Unit IV**

15. Explain concept of all pair shortest path.

#### **Unit V**

16. Explain Hash Table.