BCA-204

B.C.A. II Year Examination, 2017

Paper–IV

(Data Structure Using C)

Time : 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 पचास 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* from each unit. All questions carry equal marks.

प्रत्येक इकाई से **एक-एक** प्रश्न चुनते हुए, कुल **पाँच** प्रश्न कीजिए।

प्रत्येक प्रश्न का उत्तर 250 शब्दों से अधिक न हो।

सभी प्रश्नों के अंक समान हैं।

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. Convert A+B*C–D/E*F to postfix.

2. Which data structure is used to implement recursion & why.

UNIT-II

3. Define node. What is ordered linked list ?

4. Define get node and free node functions of linked list.

UNIT-III

5. Define BST and binary tree.

6. Define Ancestor, edge and path.

UNIT-IV

7. Define graph and types of graph.

8. Define graph traversing technique.

UNIT-V

9. What is need of searching and sorting ?

10. Define Heap.

PART-B

UNIT-I

1. Write algorithm for insertion & deletion operation in circular queue.

2. Write algorithm for converting Infix Expression to Postfix Expression.

UNIT-II

3. Explain insertion & deletion operations in Doubly linked list with algorithm and example.
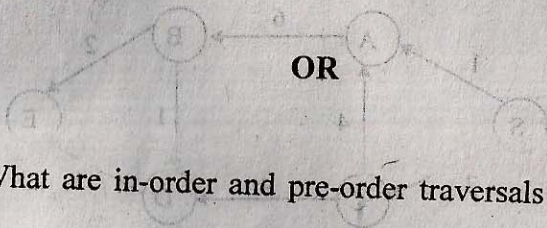
OR

4. Differentiate :

   (a) Malloc & Calloc

   (b) Static allocation & Dynamic Allocation

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(c) Singly List & doubly list

UNIT-III

5. Explain insertion in BST by algorithm & example.

OR

6. What are in-order and pre-order traversals of a tree ?

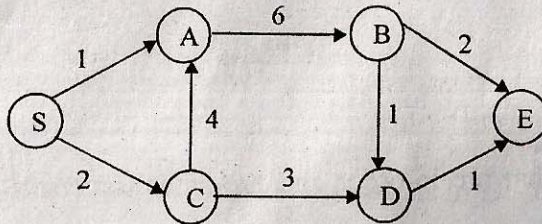Construct the binary tree from the given data :

INORDER : CEDFBAHIC

PREORDER : ABCDEFGHI

UNIT-IV

7. Explain orthogonal & multi list graph representation.

OR

8. Find shortest path using dijkstra's algorithm from S to E.

UNIT-V

9. Explain merge sort by giving suitable example.

OR

10. What is hashing ? Explain hashing methods and collision

avoiding techniques.

PART-C

UNIT - I

1. Explain applications of Stack & Queue.

UNIT - II

2. Write short notes on :

   (a) Applications of linked list

   (b) Dynamic memory allocation

UNIT - III

3. What is a B S T ? Also write an algorithm to delete a node from a BST. Use a proper example to validate your algorithm.

UNIT - IV

4. Write short notes on following :

    (a)   Differentiate DFS & BFS.

    (b)   Transitive & reflexive closure of graph.

UNIT - V

5. Explain working of Heap Sort.