

December 2019
Bachelor of Computer Applications (BCA) Examination

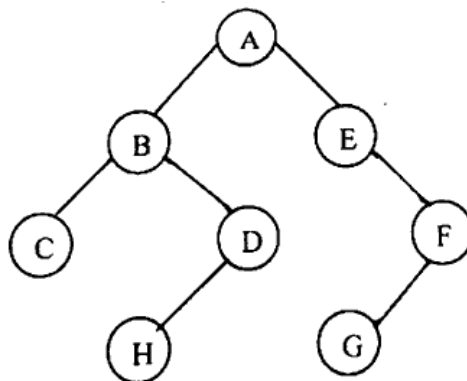
Third Semester
BCA-302 : DATA STRUCTURE USING C

Time 3 Hours]

[Max. Marks 50
[Min. Marks 17

Note : Attempt any two sub-parts of a questions. All questions carry equal marks.

1. ~~(a)~~ Define data structure. Explain various applications of data structure to justify its importance.
(b) Compare arrays and linked list stating their structure, advantages and disadvantages.
~~(c)~~ Explain different types of linked lists and operations on linked list.
2. (a) Write a program in C to implement STACK data structure. Write push(), pop(), display() functions.
(b) What are the rules to convert infix expression to postfix using stack ? Explain using given expression : $((a + b) * (C / D - E))$.
(c) Differentiate between linear queue and circular queue giving example.
3. (a) Define TREE as a data structure perform inorder, preorder and post order traversal in the given tree and state the rules of traversal.



- ~~(b)~~ Construct binary search tree for the given numbers and inorder threaded binary tree for the same numbers:
20, 15, 30, 38, 5, 16, 35, 28, 18
- ~~(c)~~ What is AVL Tree ? Why and when are the rotations performed ? Explain them giving example.
4. (a) Explain different searching algorithms compare them on the basis of complexity.
~~(b)~~ Write a program to perform insertion sort.
(c) Explain quick sort method by sorting given numbers :
10 5 7 14 2 20 16
5. ~~(a)~~ What is Hashing ? Why does collision occur ? How can we resolve collisions ?
(b) Explain different types of graphs and write their applications.
(c) Explain Dykstra's algorithm and its use.

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