BCA-12 Data Structures and Algorithms

SET : 1

Section-A

(Very Short Answer Questions)

1. (i) What do you mean by data structure?
   (ii) What is the dynamic memory allocation?
   (iii) What do you mean by stack?
   (iv) What are various operations on queue?
   (v) Define the AVL tree.
   (vi) What are three traversing that can be performed on tree?
   (vii) Give the names of traversal methods of graph.
   (viii) Define the recursion.
   (ix) What is role of tree in searching?
   (x) What are applications of spanning tree?

Section-B

(Short Answer Questions)

2. State the differences of the sequential search and binary search on the basis of complexity.
3. Describe space and time complexity with suitable examples.
4. Differentiate dynamic programming with greedy and divide & conquer methods.
5. Define the Prim's algorithm.
6. What is the binary search tree?
7. Describe the condition for recursive function.
8. What are different ways to represent a graph?
9. What are the differences between skewed binary tree and binary search tree?

Section-C

(Long Answer Questions)

10. Explain the differences between static and dynamic memory allocation.
11. Discuss the various operations on stack in detail.
12. Explain different types of queues and what are used of queues in different applications?
13. Explain the breath first algorithm of graph with suitable example.

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SET : 2

Section-A

(Very Short Answer Questions)

1. (i) What are different asymptotic notations?
   (ii) What do you mean by complexity of algorithm?
   (iii) What is the theory of dynamic programming?
   (iv) Define the divide and conquer algorithm.
   (v) Define graph.
   (vi) What do you mean by height, degree and depth of a tree?
   (viii) What do you understand by queue?
   (viii) What are applications of stack?
   (ix) List out the applications of linked list.
   (x) What are types of linked list?

Section-B

(Short Answer Questions)

2. What are different types of data structure?
3. Describe the advantages and disadvantages of array.
4. Differentiate the linked list and array.
5. What are differences between stack overflow and stack underflow?
6. Define the following:
   (a) In degree
   (b) Root node
   (c) Level
   (d) Parent
   (e) Degree of tree
7. What do mean by heap, min-heap and max-heap?
8. What is depth first traversal of a graph?
9. What are applications of graph?

Section-C

(Long Answer Questions)

10. Write an algorithm to search an element in binary search tree.
11. Explain the differences between linked list and array.
12. Compare the singly, doubly and circular linked list.
13. Explain the concept of theta, omega and big oh notations with suitable diagram.