

BCA-12
December - Examination 2019
BCA Pt. II Examination
Data Structure and Algorithm
Paper - BCA-12

Time : 3 Hours]

[Max. Marks :- 70

Note: The question paper is divided into three sections A, B and C. Write answers as per given instructions.

Section - A

7 × 2 = 14

(Very Short Answer Questions)

Note: Answer **all** questions. As per the nature of the question delimit your answer in one word, one sentence or maximum upto 30 words. Each question carries 2 marks.

1.
 - i. What are Prefix and Postfix notations?
 - ii. Define NP hard.
 - iii. Define single rotation on AVL tree.
 - iv. What is hashing function?
 - v. Differentiate Singly linked list and circularly linked list.
 - vi. What is the best way of choosing the pivot element in quick sort?
 - vii. Write the role of stack in function call.

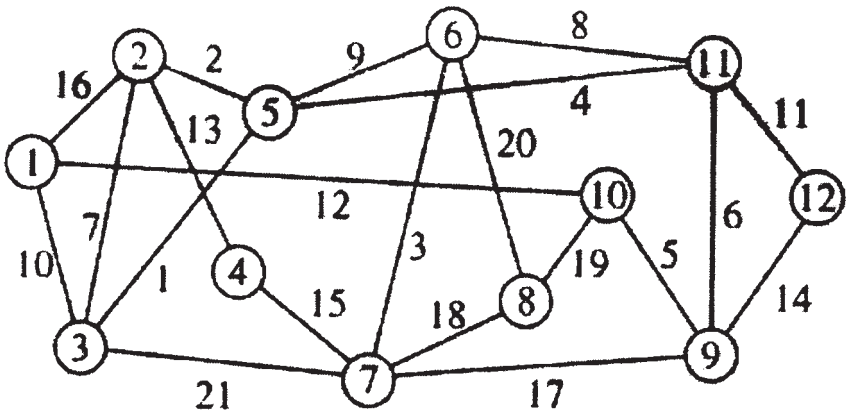
Section - B

 $4 \times 7 = 28$

(Short Answer Questions)

Note: Answer **any four** questions. Each answer should not exceed 200 words. Each question carries 7 marks.

2. Explain Quick Sort with the help of suitable example.
3. Write pseudo code for insertion sort.
4. Explain Tour of Hanoi with example.
5. Explain Stack implementation using recursion.
6. Explain the following:
 - a. Depth First Search of a graph
 - b. Minimum Spanning Trees
7. Explain the working of merge sort on the data: 14, 33, 27, 10, 35, 19, 42, 44
8. In the given graph with node 10 as the starting node, construct the minimum spanning tree using Prim's Algorithm. Also, give the minimum total weight.



9. Explain priority Queue with suitable example.

Section - C **$2 \times 14 = 28$** **(Long Answer Questions)**

Note: Answer **any two** questions. You have to delimit your each answer maximum upto 500 words. Each question carries 14 marks.

10. Explain various collision resolving tree techniques used in hashing.
 11. Explain Kruskal algorithm for a minimum spanning tree.
 12. Write Dijkstra's algorithm to find the shortest path and explain.
 13. Write an algorithm to convert postfix expression to infix expression. Trace the algorithm using one example and show the stack contents.
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