U.G. 3rd Semester Examination - 2020

BCA

Course Code : BBCACCHC303

Course Title : Introduction to Algorithm

Full Marks : 30 Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **ten** questions: 1×10=10

   a) Big O notation is used to analyze which kind of complexity?

   b) Define heap.

   c) What is the function of a linker?

   d) What are asymptotic notations?

   e) Write down the problem statement for knapsack problem.

   f) Define hashing.

   g) What is a multi-branch recursion?

   h) Mention the major difference between DFS and BFS approach of graph traversal.

   i) Do you think O(n) is better than O(1)?

   j) Give some examples of dynamic approach.

   k) Write down the problem statement for vertex cover.

   l) What is the time complexity of merge sort?

   m) Write down two characteristics of an algorithm.

   n) What are the different applications of graph coloring?

   o) What is the best case time complexity for divide and conquer algorithm?

2. Answer any **five**: 2×5=10

   a) Write down the properties of spanning tree.

   b) With proper example explain the problem statement of graph colouring.

   c) What is θ notation?

   d) Write down the algorithm to find out the longest common subsequence with a proper example.

   e) What is NP hard and NP complete?

   f) Compare between Prim's and Kruskal's algorithm.

g) What is the working principle of hash tables?

h) What is convex hull?

3 Answer any **two**: 5×2=10

a) i) Make a comparison chart between Prim's and Kruskal's algorithm.

ii) Define reccurrence. 4+1

b) i) Write down Dijkstra algorithm.

ii) Define priority queue.

c) Define big O big Omega and big theta notations.

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