U.G. 3rd Semester Examination - 2020

COMPUTER SCIENCE

[HONOURS]

Course Code : COM.SC-H-CC-306

(Design and Analysis of Algorithms Lab)

[PRACTICAL]

Full Marks : 75 Time : 4 Hours

The figures in the right-hand margin indicate marks.

Marks Distribution :

Experiment : 60 Marks

Viva : 10 Marks

Lab Notebook : 05 Marks

Answer any **two** to be allotted on lottery basis. 30×2=60

1. Write a program to implement insertion sort.
2. Write a program to implement merge sort.
3. Write a program to determine the LCS of two given sequences.
4. Write a program to implement radix sort.
5. Write a program to implement depth first search in a graph.

6. Write a program to determine the minimum spanning tree of a graph.
7. Write a program to implement heap sort.
8. Write a program to implement randomized quick sort.
9. Write a program to print all the nodes reachable from a given starting node in a digraph using BFS method.
10. Write a program to implement 0/1 knapsack problem using dynamic programming.
11. Write a program to find minimum cost spanning tree of a given undirected graph using Kruskal algorithm.
12. Write a program to find the maximum and minimum in a given list of n elements using divide and conquer.
13. Write a program to implement all pair shortest paths problem using Floyd's algorithm.
14. Write a program to perform linear search.
15. Write a program to implement the N queen's problem using back tracking where N is taken as input.
16. Write a program to check whether a given graph is connected or not using DFS method.
17. Write a program to perform DFS traversal and mark visited vertices.
18. Write a program to find all Hamiltonian cycles in a connected undirected graph.

19. Write a program to find the shortest paths from a given source vertex to other vertices using Dijkstra algorithm.

20. Write a program to print all the nodes reachable from a given starting node in a graph using BFS method.

———————