UNIT-V
BACK TRACKING & BRANCH AND BOUND

1) Write control abstraction for backtracking. **(BTL-II)**

2) Draw the portion of state space tree for 4 queen's problem using variable – tuple sized approach. **(BTL-II)**

3) State N-Queen's problem and solve 8-Queens problem using backtracking. **(BTL-II)**

4) Draw the portion of state space tree generated by recursive backtracking algorithm for sum of subsets problem with an example. **(BTL-II)**

5) Explain the concept of graph coloring. **(BTL-II,V)**

6) Explain the Graph-Coloring problem. And draw the state space tree for m=3 color n=4 vertices graph. Discuss the time complexity. **(BTL-II,V,VI)**

7) Discuss about Hamiltonian cycles in details. **(BTL-VI)**

8) What is a Hamiltonian Cycles? Explain how to find Hamiltonian Cycle using back tracking algorithm. **(BTL-I,II,V)**

9) Explain about LC and FIFO Branch and Bound solutions. **(BTL-II,V)**

10) Explain the principles of FIFO Branch and Bound. **(BTL-II,V)**

11) What is LC search? Discuss LC search algorithm. **(BTL-I,VI)**

12) Explain the FIFOBB 0/1 Knapsack problem procedure with the knapsack instance for $n = 4$, m=15, $(p_1, p_2, p_3, p_4) = (10,10,12,18), (w_1, w_2, w_3, w_4) = (2,4,6,9)$. Draw the portion of the state space tree and find optimal solution. **(BTL-II, V)**

13) Find the optimal solution using least cost branch and bound with $n = 4$, m=15, $(p_1, p_2, p_3, p_4) = (15,15,17,23), (w_1, w_2, w_3, w_4) = (3,5,6,9)$. **(BTL-I)**

14) Distinguish between backtracking and branch and bound techniques. **(BTL-IV)**