Unit - I

		BL

1.	a) Determine the frequency counts for all the statements in the following algorithm. (7M)
	For i:= 1to n do
	For j:= 1 to i do
	For k:= 1 to j do
	x:= x+1 ;
	
	b)) Determine the time complexity for the following algorithm. (7M)
	Algorithm Mult(a, b, c, m, n ,p)
	{
	For i:= 1to m do
	For j:= 1 to p do
	{
	C[i,j]:= 0;
	For k:= 1 to n do
	C[i,j]:= C[i,j]+ a[i,k]*b[k,j];
	}
	}
		L3

	(OR)	
2.	a) Explain about the asymptotic notations with suitable examples. (10M) b)) what is meant by an algorithm? Explain about the criteria that can be followed for an algorithm. (4M)	L2

Unit - II

3.	a) Show how MergeSort algorithm works on the data set "100,300,150,450,250,350,200,400,500" and draw the merge tree. (8M) b) Solve the following recurrence relation using master method. (6M) T (n) =2T (n/2) +n, T (0) =T (1)	L3
	(OR)	

4.	a) Sort the record with the following index values using QuickSort. "20, 30, 10, 40, 5, 60, 90, 45, 35, 25, 15, 55". (7M) b) Draw the binary decision tree for the following set. "3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 47". And search for an element x=30. (7M)	L3
	Unit - III	
5.	a) By applying greedy approach find the optimal solution to the knapsack instance n=5, M=10 (P1, P2, …. ,P 5) = (12, 32, 40, 30, 50) and (W1, W2, …., W5) = (4, 8, 2, 6, 1). (7M) b) Find the optimal solution for the instance by applying JS algorithm. n=7, (p1,p2,...p7) = (3,5,20,18,1,6,30) and (d1,d2,...d7) = (1,3,4,3,2,1,2) (7M)	L3
	(OR)	
6.	a) What is meant by minimum coast spanning tree? Write and explain Prim's algorithm with suitable example. (10M) b) Describe single source shortest path algorithm. (4M)	L2
	Unit - IV	
7.	a. Construct an optimal travelling sales person tour using Dynamic Programming for the given data: (7M) $\begin{bmatrix} 0 & 10 & 9 & 3 \\ 5 & 0 & 6 & 2 \\ 9 & 6 & 0 & 7 \\ 7 & 3 & 5 & 0 \end{bmatrix}$ b) Find the minimum no of operations required for the following chain matrix multiplication using dynamic programming. A(30,40) * B(40,5) * C(5,15) * D(15,6).(7M)	L3
	(OR)	
8.	a) Solve the following 0/1 knapsack problems using dynamic programming. P= (11,21,31,33), w=(2,11,22,15), m=40 and n=4. (7M) b)) Solve the all-pairs shortest path problem for the digraph with the weight matrix: $\begin{bmatrix} 0 & 2 & \infty & 1 & 8 \\ 6 & 0 & 3 & 2 & \infty \\ \infty & \infty & 0 & 4 & \infty \\ \infty & \infty & 2 & 0 & 3 \\ 3 & \infty & \infty & \infty & 0 \end{bmatrix}$	L3

9.	a) Draw the portion of state space tree generated by LCBB for the 0/1 Knapsack instance: n = 5, (p1,p2,…,p5) = (10,15,6,8,4), (w1,w2,..,w5) = (4,6,3,4,2) and m=12. (8M) b) Draw the states pace tree for m-coloring when m=3 and n=3. (6M)	L2
	(OR)	
10.	Apply the LCBB algorithm to solve the TSP for the following cost matrix and find reduced cost matrix and draw the portion of state space tree also. (14M) $\begin{matrix} \infty & 11 & 10 & 9 & 6 \\ 8 & \infty & 7 & 3 & 4 \\ 8 & 4 & \infty & 4 & 8 \\ 11 & 10 & 5 & \infty & 5 \\ 6 & 9 & 5 & 5 & \infty \end{matrix}$	L3