



Brainware University 398, Ramkrishnapur Road, Barasal Kolkata, West Rengal-700125

Term End Examination 2022 Programme – M.Tech.(CSE)-AIML-2022 Course Name - Advanced Algorithm Course Code - PCC-MCSM101 (Semester I)

	, w	ords as far as practicable.]			
1.	(Mul Choose the correct alternative from	Group-A Itiple Choice Type Question) the following:	1 x 15=15		
(i)	What procedure is being followed i	n Floyd Warshall Algorithm?			
(ii)	a) Top downc) Big bangCompute What will be the chromatic r	b) Bottom up d) Sandwich number for an empty graph having n vertices?			
(iii)	a) 0 c) 2	b) 1 d) n			
	What is the space complexity of the abore problem?	ove dynamic programming implementation of the matr	ix chain		
(iv)	a) O(1) c) O(n²) Identify Which one of the following is a	b) O(n) d) O(n ³) in application of the backtracking algorithm?			
(v)	a) Finding the shortest pathc) Ludo	b) Finding the efficient quantity tod) Crossword	shop		
	What is the time complexity of the above dynamic programming implementation of the matrix chain problem?				
(vi	a) O(1) c) O(n ²)	b) O(n) d) O(n ³)			

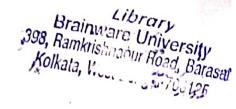
(vii) Of the following given options, evaluate which one of the following does not provides an

b) Prim's algorithm

d) Bellman-Ford algorithm

a) Boruvka's algorithm

c) Kruskal's algorithm



	to see for 8 gueens problem?	1) (1 6 2 9 2 2 4 7)	Dara
	optimal solution for 8-queens problem?	b) (1,6,3,8,3,2,4,7)	1.100 136
	a) (5,3,8,4,7,1,6,2)	d) (6,2,7,1,4,8,5,3)	
	c) (4,1,5,8,6,3,7,2)	<i>a</i> , (0,2,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,	
	Calculating the chromatic number of a graph is a	b) NP hard problem	
	a) P problem	d) cannot be identified as any of the given	
	c) NP complete problem	problem types	
(iv)	The time complexity of the solution tower of har	oi problem using recursion is	
(1/)		b) O(2n)	
	a) O(n2)	d) O(n)	
()	c) O(n log n)(Determine Which algorithm is used to solve a magnetic content of the content of	aximum flow problem?	
(x)			
	a) Prim's algorithm	J) Ford Eulkerson algorithm	
	c) Dijkstra's algorithm Identify which of the following is/are property/p	roperties of a dynamic programming	
(xi)	Identity which of the following is are property.		
	problem?	b) Overlapping sub problems	
	a) Optimal substructure	d) Both optimal substructure and overlapping	ng
	c) Greedy approach	aub problems	
	In dynamic programming, name the technique of	of storing the previously calculated values	
(xii	In dynamic programming, name the teenings		
	is called	b) Storing value property	
	a) Saving value property	d) Mapping	
	c) Memorization) Define the recursive solution of tower of hanoi	problem is an example of which of the	
(xiii) Define the recursive solution of tower of handry		
	following algorithm?	b) Backtracking	
	a) Dynamic programming	d) Divide and conquer	
	c) Greedy algorithm	a) Divide and conque.	
(xiv	Express What is an in-place sorting algorithm?		
	 a) It needs O(1) or O(logn) memory to create auxiliary locations 	b) The input is already sorted and in-place	
	c) It requires additional storage	d) None of the mentioned	
(xv) Describe What happens when the backtracking	algorithm reaches a complete solution?	
(^*	······································	b) It continues searching for other possible	е
	a) It backtracks to the root	solutions	
	c) It traverses from a different route	d) Recursively traverses through the same	route
	Gro	up-B	
	(Short Answer	Type Questions)	3 x 5=15
2.	Classify different types of algorithm on the basis of	their features.	(3)
3.	Construct a recursion tree for Quick Sort algorithm	•	(3)
4	A thief, with a knapsack, can steal n items. Each item Ii h	nas is certain weight Will and value Vi. The accident	m (a)
	capacity of the knapsack is W. Develop an algorithm which values. Perform your algorithm over the given set of values of the Knapsack weight $W = 100$		m (3)

Brainware University
398, Ramkrishnapur Road, Barrage
Kolkata Wasi Panada

(3)

OR Conclude that Graph colouring problem is NP Complete.

6. Justify that Fractional knapsack is more useful than 0/1 Knapsack.

OR

Propose an example to define Clique Decision Problem (CDP).

(3)

(3)

Group-C (Long Answer Type Questions)

5 x 6=30

(5)

7. You are given a knapsack that can carry a maximum weight of 60. There are 4 items with weights {20, 30, 40, 70} and values {70, 80, 90, 200}. Determine the maximum value of the items you can carry using the knapsack?

- 8. Illustrate the KMP algorithm for string matching problem and define the time complexity of it. (5)
- 9. Distinguish among Dynamic programming and Greedy approach with examples.
- 10. Define time complexity and the methods to measure it. (5)
- 11. Compare different algorithmic technique using following criterias: Time, space, merits, demerits (5)
- 12. Evaluate the minimum cost to travel from one city to another using TSP: (5)

	C_1	\mathbf{C}_2	\mathbf{C}_3	C4	C ₅
C_1	8	2	5	7	1
C ₂	б	8	3	8	2
C ₃	. 8	7	8	4	7
\mathbf{C}_4	12	4	б	8	5
C ₅	1	3	2	- 8	8

OR

Deduce that average case time complexity of quick sort is O(nlogn)

(5)
