Code No: P18ITT04

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END REGULAR EXAMINATIONS, DEC/JAN – 2022/23
DESIGN AND ANALYSIS OF ALGORITHMS
(Common to IT,AIDS,AIML Branches)

Time: 3 hours Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

Q.No.		Questions	Marks	CO	KL
1.	a)	List out various asymptotic notations used for best case, average case and worst case analysis of algorithms	[2M]	1	L1
	b)	Write the Huffman Algorithm.	[2M]	2	L3
	c)	Give the example for 0/1 knapsack problem.	[2M]	3	L3
	d)	State the principle of Backtracking	[2M]	4	L1
	e)	Compare NP-hard and NP-completeness	[2M]	5	L4

PART-B

Answer One Question from each UNIT (5X10=50M)

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.		Explain Binary search algorithm and analyze its time complexity.	[10M]	1	L4
		OR			
3.	a)	Define big oh(O),Big omega(Ω) and big theta(Θ) notations	[3M]	1	L1
	b)	Explain quick sort algorithm and simulate it for the following data 20, 35, 10, 16, 54, 21, 25	[7M]	1	L2
		UNIT-II			
4.		What is Minimum cost spanning tree? Explain an algorithm for generating minimum cost spanning tree and list out the Applications of Minimum Cost Spanning tree.	[10M]	2	L2
		OR			
5.		Write Huffman code algorithm and derive its complexity.	[10M]	2	L2
		UNIT-III			
6.		Explain the Travelling sales man problem with suitable example.	[10M]	3	L2
		OR			
7.	a)	Discuss all pairs shortest path problem with an example	[5M]	3	L2
	b)	Compare and contrast greedy method and dynamic programming.	[5M]	3	L4
		UNIT-IV			
8.		Write an algorithm for N-queens problem using backtracking.	[10M]	4	L2
		OR			
9.		Describe in detail graph coloring using back tracking.	[10M]	4	L2
		UNIT-V			
10.	a)	How are P and NP problems related?	[3M]	5	L2
	b)	Explain Knuth-Morris-Pratt algorithm with suitable example	[7M]	5	L2
		OR			
11.		Explain about the KMP pattern matching algorithm. Illustrate the operations of KMP pattern matching algorithm with example.	[10M]	5	L2

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