QPC: RJ19BTECH147 AR 19 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fourth Semester – Regular) Examinations, June – 2021

BPCCS4030 / BPCCT4030 – Design and Analysis of Algorithms

(Common to CSE and CST)

Time: 2 hrs Maximum: 50 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) **(1 x 10 = 10 Marks)**

Q.1. Answer ***ALL*** questions	[CO#]	[PO#]
a. Which of the following sorting procedures is the slowest?	2	1
(i) Quick sort (ii)Heap sort		
(iii)shell sort (iv)Bubble sort		
b. The time complexity of binary search is_____		
(i) O(1) (ii) O(log n)	2	1
(iii) O(n) (iv) O(n logn)		
c. While solving the problem with computer the most difficult step is _____.	1	1
(i)describing the problem (ii)finding out the cost of the software		
(iii)writing the computer instructions (iv)testing the solution		
d. Two sets A and B are disjoint, if their ---------- is an empty set	2	1
(i) union (ii) difference		
(iii) intersection (iv) inversion		
e. Which statement is not true in case of backtracking method	4	1
(i) it is a variation of the basic dynamic programming idea. (ii) many problems which deal with searching for a set of solutions can besolved using backtracking method.		
(iii) using backtracking method we can solve problems in an efficient way when compared to greedy method (iv) for a given solution space a unique tree organization is possible.		
f. For a given solution space a unique tree organization is possible.	3	1
(i) knapsack (ii)hamiltonian		
(iii)Prim's (iv)greedy		
g. ---- is a tree pruning technique for solving optimization problem using search technique	4	1
(i)branch and bound (ii)backtracking		
(iii)dynamic programming (iv) divide and conquer		
h. ---------- algorithm is used to find shortest path problem	3	1
(i) Dijkstra's algorithm (ii) Prim's algorithm		
(iii) Kruskal's algorithm (iv) Huffman algorithm		
i. BFS and DFS are	3	1
(i) Graph Algorithms (ii) Searching techniques		
(iii) sorting techniques (iv) none of the above		
j. BFS algorithm uses --------- data structure	3	1
(i) Queue (ii) Stack		
(iii) Binary Tree (iv) Heap		

PART – B: (Short Answer Questions) **(2 x 5 = 10 Marks)**

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. Write about time complexity	1	1
b. Define spanning tree with example.	2	1
c. Discuss about Dynamic Programming	3	1
d. Define 0/1 knapsack problem	3	1
e. Differentiate deterministic and nondeterministic algorithm and also give examples.	4	1

PART – C: (Long Answer Questions) **(6 x 5 = 30 Marks)**

Answer ***ANY FIVE*** questions	Marks	[CO#]	[PO#]
3. Illustrate about Amortized Analysis with example	(6)	1	1,2
4. Apply suitable algorithm technique to solve Sum of subsets problem	(6)	1	1,2
5. Design an algorithm for quick sort and also compute time complexity	(6)	2	1,2
6. Design Floyd–Warshall Algorithm	(6)	3	1,2
7. Discuss about BFS with example.	(6)	2	1,2
8. Write a short note on Disjoint set data structures.	(6)	3	1,2
9. Solve Vertex cover problem.	(6)	4	1,2
10. Design Rabin-Karp algorithm,	(6)	4	1,2

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