QPC: RN22PHD381 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (Second Semester) Examinations, November – 2023

WPPECS2019 - Advance Algorithms

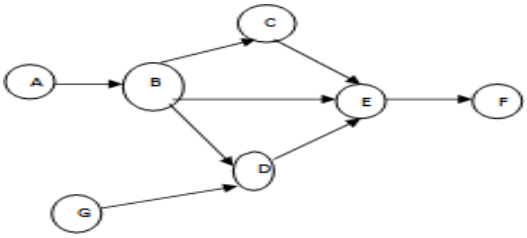
(CSE)

Time: 3 hrs Maximum: 70 Marks

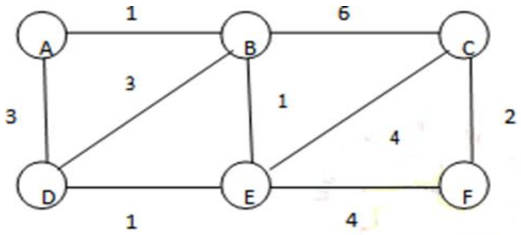
The figures in the right hand margin indicate marks.

Answer ANY FIVE Questions **(14 x 5 = 70 Marks)**

		Marks
1.a.	Derive the time complexity of Merge sort algorithm for all cases.	7
b.	Consider the given directed acyclic graph D. Sort the nodes D by applying topological sort on 'D'.	7



2.a.	Discuss the single–source shortest paths (Dijkstra's) algorithm with suitable examples and also find the time complexity.	7
b.	Explain General method of Greedy method. Find the greedy solution for following job sequencing with deadlines problem n = 7, (p1,p2,p3,p4,p5,p6,p7) = (3,5,20,18,1,6,30), (d1,d2,d3,d4,…,d7) = (1,3,4,3,2,1,2)	7
3.a.	Formulate the minimum spanning tree for the following graph.	7



b.	Evaluate Edmond's Blossom algorithm in computing augmenting path.	7
4.	Suppose you are given a directed graph with integer edge capacities and a maximum flow from a vertex s to a vertex t in this graph. Now we decrease the capacity of an edge e in the graph by 1. Give a linear time algorithm to find the new maximum flow in this graph.	14
5.	Explain how Matrix – chain Multiplication problem can be solved using dynamic programming with a suitable example.	14
6.	Explain 0/1 knapsack problem using dynamic programming.	14
7 .	Explain Floyd-Warshall algorithm using a dynamic programming approach to find All pairs Shortest path problem.	14
8 a.	T(n)=7T(n/2)+18n2 Solve the recurrence relation and find the time complexity.	7
b.	Explain Strassen's algorithm for matrix multiplication with the help of an example.	7

---End of Paper---