

Answer the following all questions:

Q1:

(20 Marks)

- Define the following: Combinatorial, Basic variable, Optimal solution, and Direct Graph.
- Using Merge Sort Algorithm to solve the following
- Solve the following LPP by using Graphical method

36	120	55	30	13	3	21
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$$\text{Max } z = 3x_1 + 9x_2,$$

$$\text{s.t. } x_1 + 4x_2 \leq 8, x_1 + 2x_2 \leq 4, x_1, x_2 \geq 0.$$

Q2:

(20 Marks)

- Use Simplex method to solve LPP

$$\text{Min } z = 3x_1 + 2x_2,$$

$$\text{s.t. } x_1 + x_2 \leq 1, 2x_1 + 4x_2 \geq 8, x_1, x_2 \geq 0$$

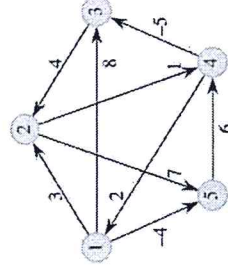
- Use the Vogel's Method to solve the following LPP

	D_1	D_2	D_3	Demand
S_1	80	60	90	800
S_2	100	120	70	600
S_3	40	50	30	1000
Supply	500	700	1200	2400 / 2400

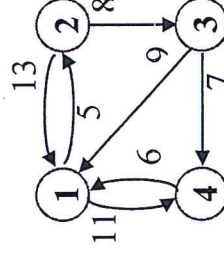
Q3:

(30 Marks)

- Use the Dijkstra's Algorithm to find the shortest path between all pairs of graph.



- Find the Shortest path between all pairs of graph by using Floyd-Warshall Algorithm.



With my Best wishes

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