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CLASS BS SE (A)

SEM 4th

SUBJ OPERATION RESEARCH

ID 14468

Date: _____

Question no: 2:

A manufacturer produce two type of product A and B.

Answer:-

Types of product

Type of Product

types of product	Number Sold in month	Net profit
A	150	
B	200	

MD

The ~~MD~~ of the company has set the following goal which are arranged in order of priority P_1 no order utilization of plant production capacity.

P_2 sell maximum possible number of product A and B. The MD has twice as much desire to sell product A as for product B, because the net profit from the sale of product A is a twice

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the amount from that of product B.

P₃ minimize overtime operation of the plant. formulate the above as a goal programming problem and solve it.

So, let x_1 and x_2 be the number of product a and b. Since overtime operation are not allowed.

$$x_1 + x_2 + d_1 - d_1^+ = 500 \text{ (Plant Capacity)}$$

where d_1 = under utilization of d_1^+ - Overtime production capacity variable.
 d_1^+ overtime production operation capacity variable.

Since goal is the maximum of sales, Deviance positive deviation will not appear in constraints. related with sales.

$$\text{then } x_1 + d_2^- = 150$$

$$\text{and } x_1 + d_3^- = 200$$

d_2^- = under achievement of sale goal for
(A)

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$d_3 =$ under achievement of Sale
goal for (B)

Now the goal programming mathematically
model can be written as minimize Z

$$Z = p_1 d_1 + 2p_2 d_2 + p_2 d_3 + p_3 d_4$$

Subject to the constraints

$$x_1 + x_2 + d_1 + d_4 = 500$$

$$x_1 + d_2 = 150$$

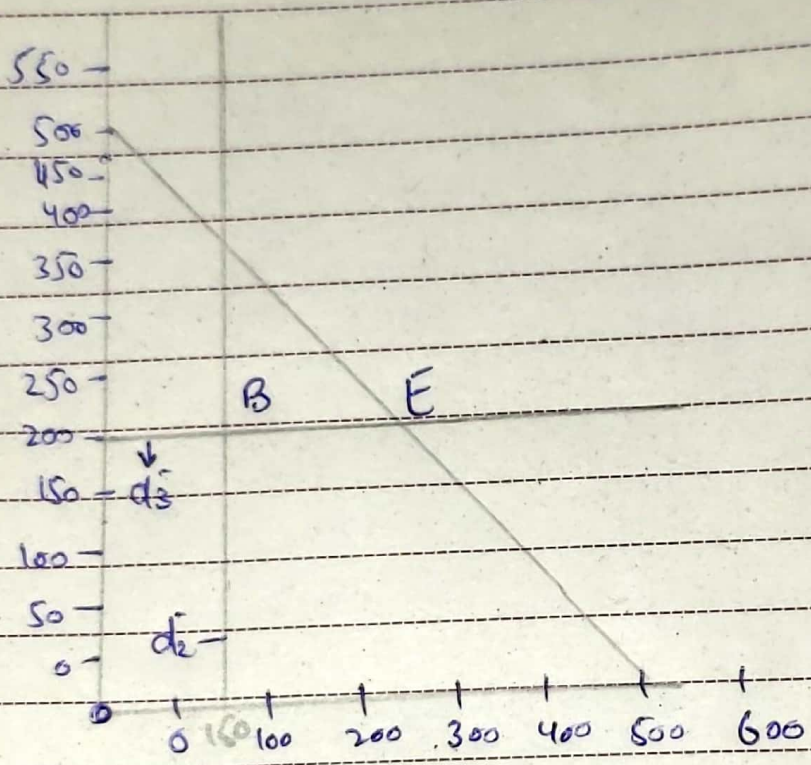
$$x_2 + d_3 = 200$$

$$\text{and } x_1 > x_2, d_2, d_3, d_4 \geq 0$$

All the goal constraints
can be plotted on the
graph.

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END