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Question no: 2

A manufacturer produce two type of Product A and B.

Answer:-

Type of Product

Type of Product	number in month	Net Profit
A	150	
B	200	

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 the amount from that



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of Product B.
of P_3 plant. minimize overtime operation
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, Devences positive deviation
will not appear in constraints
related with sales.

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

$$x_1 + d_3^- = 200$$

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

$$Z = P_1 d_1 + 2P_2 d_2 + P_2 d_3 + P_3 d_4$$

subject to the constraints

$$x_1 + x_2 + d_1 + d_1^+ = 500$$

$$x_1 + d_2^- = 150$$

$$x_2 + d_3^- = 200$$

$$\text{and } x_1 \geq x_2, d_2^-, d_3^-, d_1^+ \geq 0$$

All the goal constraints can be plotted on the graph.

