

Name Zain ul abideen

I.D 14713

B.s software engineering

Section B

Submitted to Saifullah jan

Q 1:

A company produces  
of products  $P_1, P_2$  and

	Time required	
Production	progress	Finishing
$P_1$	12	03
$P_2$	06	08
$P_3$	08	06
company capacity	3000	1500

Now convert into linear px

$$12x_1 + 6x_2 + 8x_3 \leq 3000$$

$$3x_1 + 8x_2 + 6x_3 \leq 15$$

$$\text{Maxim } Z = 1000x_1 + 800x_2 + 6$$

Now find  $x_1$  intercept  
put  $x_2 = 0$  and  $x_3 = 0$

$$12x_1 + 6x_2 + 8x_3 = 3000$$

$$\text{Put } x_2 = 0 \text{ and } x_3 = 0$$

$$= 12x_1 + 6(0) + 8(0) = 3000$$

$$x_1 = \frac{3000}{12} = 250$$

$$= P_1(250, 0, 0)$$

Now for  $x_2$  intercept put  $x_1 = 0$   
and  $x_3 = 0$

$$12x_1 + 6x_2 + 8x_3 = 3000$$

$$12(0) + 6x_2 + 8(0) = 3000$$

$$x_2 = \frac{3000}{6} = 500$$

$$P_2 = (0, 500, 0)$$

Now for  $x_3$  intercept put  
 $x_1 = 0$ , and  $x_2 = 0$

$$3x_1 + 8x_2 + 6x_3 = 1500$$

$$3(0) + 8(0) + 6x_3 = 1500$$

$$x_3 = \frac{1500}{6} = 250$$

$$P_6 = (0, 0, 250)$$

then all point put in  $Z$  to find the maximum value.

$$Z = 1000x_1 + 800x_2 + 400x_3$$

$$Z = 1000(250) + 0 + 0 = 250000$$

$$Z = 1000 + 800(500) + 0 = 400000$$

$$Z = 0 + 0 + 400(375) = 150000$$

$$Z = 1000(500) + 0 + 0 = 500000 \checkmark$$

$$Z = 0 + 800(187.5) + 0 = 150000$$

$$Z = 0 + 0 + 400(250) = 100000$$

Now the maximum point is

$$P_4(500, 0, 0) = 500000$$

Q 2:

\* The MD of the Company has the following goals which are arranged in order of priority.

\* P<sub>1</sub> No under utilization of plant production capacity.

\* P<sub>2</sub> Sells maximum possible number of products - 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 for product B the amount

\* We are formulating the above as a general programming problem and solving it.

\* goal is the maximization of sales.

then

$$x_1 + z_2 = 150$$

and

$$x_2 + z_3 = 200$$



Subjected to constraints.

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

$$x_1 + d_2^- = 150$$

$$x_2 + d_3^- = 200$$

and

$$x_1, x_2, d_1^-, d_2^-, d_3^-, d_1^+ \geq 0$$

