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Sessional : Assignment

Subject : OPERATIONS RESEARCH

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Program : BS (SE)

Question # 01:-

A company produces 03 products P_1 , P_2 and P_3 . Time required solution :-

Produking	Progress	Finishing
P_1	12	0.3
P_2	0.6	0.8
P_3	0.8	0.6
Company capacity	3000	1500

NOW convert into Linear programme.

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

$$3x_1 + 3x_2 + 6x_3 \leq 1500$$

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

NOW Find x_1 intercept

Put $x_2 = 0$ and $x_3 = 0$

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

Put $x_2 = 0$ and $x_3 = 0$

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

$$12x_1 + 0 + 0 = 3000$$

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

$$x_1 = 250$$

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

Now for x_2 intercept put $x_1 = 0$

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

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

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

$$0 + 6x_2 + 0 = 3000$$

$$6x_2 = 3000$$

dividing by 6.

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

$$x_2 = 500$$

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

Now for x_3 intercept

$$\text{put } x_1 = 0 \text{ and } x_2 = 0$$

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

$$12(0) + 6(0) + 8x_3 = 3000$$

$$0 + 0 + 8x_3 = 3000$$

$$8x_3 = 3000$$

dividing by 8.

$$\frac{8x_3}{8} = \frac{3000}{8} = 375$$

$$x_3 = 250 \quad 375$$

$$P_3 (0, 0, 375)$$

That is all points put in equation (Z) to find the maximum point value.

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

$$Z = 1000(250) + 800(0) + 400(0)$$

$$Z = 2,50,000 + 0 + 0$$

$$Z = 2,50,000$$

Now put another intercept

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

$$Z = 1000(0) + 800(500) + 400(0)$$

$$Z = 0 + 4,00,000 + 0$$

$$Z = 4,00,000$$

Now put 3rd intercept.

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

$$Z = 1000(0) + 800(0) + 400(375)$$

$$Z = 0 + 0 + 1,50,000$$

$$Z = 1,50,000$$

$$Z = 1000(500) + 0 + 0 = 5,00,000 \checkmark$$

$$Z = 0 + 800(187.5) + 0 = 1,50,000$$

$$Z = 0 + 0 + 400(250) = 1,00,000$$

Now max points is

$$P_4(500, 0) = 5,00,000$$

Question # 09 :-

The MD of the company has the following goals which are arranged in order of priority.

- * P₁ No under utilization of plant production capacity.
- * P₂ Sell maximum possible number of products, A & 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 the amount

Solution :-

- * we are formulating the above as general programming problem and solving it.
- * goal is the maximization of sales.

then

$$x_1 + 2x_2 = 150$$

and

$$2x_1 + x_2 = 200$$

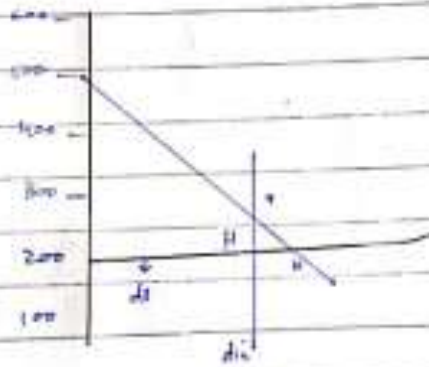
Subjected to constraints

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

$$x_1 + d_2 = 150$$

$$x_2 + d_3 = 200$$

and $x_1, x_2, d_1, d_2, d_3, d_4 \geq 0$



Q NO 03 :-

Write a detailed summary of the paper Research provided to you in slide. The summary must include each section.

ANSWER :-

→ Introduction :-

Critical Path Methodology is a programming methodology that will repeated all of the various interactions, communications, and defects. The critical path method is an algorithm for scheduling a set of projects activities, its a commonly used in conjunction with the program evaluation and Review (PERT) techniques.

→ Research hypothesis :-

This study was one Rule among many simple algorithmic rules to stimulate the calculation of the largest path. Therefore, minimum amount of time is Required to perform an activity

from the dragomity algorithms and that the Results can be examined.

→ Literature Review:-

Exploring open to calculate the time Resources and value required for projects and events. cpm is used to appear the value and time interchanges by activities that take a shorter time at in expensive.

→ CPM Simulation:-

cpm analysis the earliest begin time LS the earliest and time EFF the latest end time ratio frequency, and total float FF should be documented for each activity.

→ Research methodology:-

The study utilize the dynamic and static group behavior of dragomity in nature to obtain and of this approach use to use dragomity behavior to achieve

→ Results :-

Separation from each other so to avoid the drag rule from static collisions with other fellow humans, coordinations and direct AI is the drag rule behavior to match speed with other fellow humans.

→ Discussion :-

most of the ventures are target-oriented objective is to create, generate or change different offices.

These kinds of ventures include dynamic process which will be isolated into four stages conceptualization, definition, realization and utilize.

→ Conclusion :-

The drag rule is successfully intended to optimize the conclusion they have used this techniques to solve that problems, taking into account projects cost, activity durations and activity durations and activity correlations in the Required with the drag rule.