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SECTION A

COURSE NAME: OPERATION RESEARCH

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Q.2. A manufacturer produces two types of products A and B. The plant has reproduction capacity of 500 hours a month. Production a product A or B on average requires one hour in the plant. The number of products A and B sold every month and the net profit from the sales of these product is given in the following table.

Type of Product	Number sold in month	Net Profit
A	150	
B	200	

Answer:

Let X_1 and X_2 be the number of products of A & B. Since overtime operations are not allowed.

$X_1 + X_2 + d_1^- - d_1^+ = 500$ (Plant capacity constraint)

where d_1^- = under utilization of production capacity variable,

d_1^+ = overtime production operation capacity variable,

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

Then $X_1 + d_2^- = 150$

and $X_2 + d_2^- = 200$

where d_2^- under achievement of sale goal for product A.

Name: Abdul Salam ID:- 14480 Section (A)

d_2^- = under achievement of sale goal for product B.

Now the goal programming mathematical model can be written as

Minimize $Z = p_1 d_1^- + 2p_2 d_2^- + p_2 d^{5-} + p_3 d_1^+$

Subject to constraints

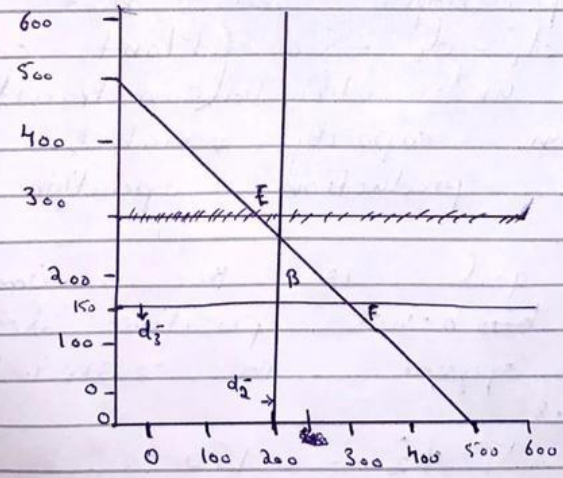
$$X_1 + X_2 + d_1^- - d_1^+ = 500$$

$$X_1 + d_2^- = 150$$

$$X_2 + d_3^- = 200$$

and $X_1, X_2, d_1^-, d_2^-, d_3^-, d_1^+ \geq 0$

All the goal constraints can be plotted on the graph as shown below.



Q 3: Write a detail summary of the research paper provided to you in sic. The summary must include each section of the paper. You must use your own sentences/words.

Answer:

Introduction:

Critical Path Methodology (CPM) is a planning method that will utilize all these various interactions, interactions, and path problems within a project network model [1]. The CPM process is to find a long way to go, and thus compresses and shortens the time it takes for a project to end within the building of a strong network of presidential activities within a given area.

A practical diagram of allocating resources over time to perform overlapping tasks from different media states and quantities of hardware is that they should inform the transaction between access to resources and time to work. It is necessary to calculate the time it takes to complete a complete project, which includes the amount of time spent making all the specified connections to the route (s) in relation to specific critical situations. By manipulating network mapping functions, the behavior pattern will be estimated by applying the integral method and performing the appropriate compression functions [5]. The reduction of the time that a project requires across the network is determined by prioritizing or performing multiple tasks between the basic steps set by the set criteria, done by making the smallest amount of time required to perform the task [6]. Considering the importance of time, the cost of operations within the network, and the increasing calculation of the critical path while in this study, the dragonfly algorithmic law is used as swarm intelligence (SI). By modeling and analyzing typical dragon patterns, this study has identified the exact algorithmic law of the methods available for a small amount of cost and time for every task.

Research hypothesis:

This study uses one rule among many simple algorithmic rules to simulate the longest path calculation; Therefore, a small amount of time is required to perform the function from the dragon algorithm, and that the results can be evaluated. Behavioral studies of insect migration have shown that their behavior is completely automated and is considered to be robust behavior, that is, the collective organization of dragonflies with at least one factor at completely different levels. This knowledge of the dragonfly allows them to take advantage of the environment and to see the natural conditions in the standing and moving yards. Finding a critical path in static networks is very difficult, since the number of objects and the number of relationships cannot be undetermined [9]. Previous studies on the role of critical pathway in task networks have assumed that this network is static [10] [13].

2. Literature Review

SI refers to the irrational estimation of the collective and social intelligence of the gadget of living organisms in the environment [18]. Since there is no one place to manage to lead people, finding simple rules among their various types can mimic the behavior of a perfect population. When the hymenopteron finds food, it returns to the nest and marks the path in hiding to suggest a path for others. The PSO formula mimics these three rules and guides the particles towards the optimal solutions used by each individual and the swimmer at the same time. This formula sometimes mimics the behavior of bees.

3.CPM Simulation

In classical CPM analysis, the first LS atom time, the last start time, the first EF, the radio frequency, and the total TF should be recorded for each activity [24]. However, when confronted with large complex CPM networks, with many fine-tuned workflows and activities, the classical CPM formula becomes complicated and ineffective for two reasons [12]. First, the timing of all operations should be followed by holding and holding throughout the pass calculation to perform the previous return calculations. Second, the 5-time attributes must be calculated before specifying the task's severity. To expose the projected risk of every work and project as a whole, the simulation may have worked more often.

4.Research Methodology

The patterns of dragonflies are as follows: separating Encounters for Seeking Diet Diet from Enemy Dragonflies track their behavior to eliminate an enemy is considered by the following equation, where X is the position of the current person, and indicates the position of the enemy. = + X The behavior of dragonflies is considered as a combination of the five algorithms in this paper. The method of calculating the dragon algorithm is as follows: S shows the weight of the division Seven shows the division of the weight of each j-th. ICi the harmony of man j-th. Ei The position of the enemy is j-th.w the weight within t is the reciprocal count. Unity and Unity ICi = - X Where X is the current position of insects.

THE END.