**Decision Analysis & Modeling**

**April 2023 Examination**

**Q1. Solve the below Transportation problem where a company has 3 plants P1, P2 and P3.**

**Profit per unit from each plant to each warehouse is given in rupees. (10 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Warehouse**  **Plant** | **W1** | **W2** | **W3** | **Capacity** |
| **P1** | **58** | **56** | **60** | **2000** |
| **P2** | **50** | **54** | **46** | **2000** |
| **P3** | **70** | **74** | **76** | **2000** |
| **Warehouse** | **1500** | **3000** | **1500** | **6000**  **6000** |

**Ans 1.**

**Introduction**

In this fast-paced world, the requirement for a commodity is increasing. Accordingly, the vitality of transportation has an influential role in society. The fortunes and profits of the groups which are moving clothing from one point of the country to any other are decided through transportation. This is true when transportation time and transportation costs are more overwhelming than manufacturing time and production charges. What if the car in all sectors is handled professionally and the prices included are the most efficient? A country's productivity wills upward push n if no different It is only half solved

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**Q2. A consumer goods company has set up following pay off table for the sales returns of their product. Three strategies (S1, S2, S3) are identified to deal with three uncertain nature**

**(N1, N2, N3).**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **S1** | **S2** | **S3** |
| **N1** | **800** | **500** | **300** |
| **N2** | **350** | **300** | **100** |
| **N3** | **400** | **550** | **0** |

**You are required to identify right strategy under following criteria:**

**1) Maximin 2) Minimax regret 3) Laplace (10 Marks)**

**Ans 2.**

**Introduction**

A simple and clean calculation must be made to decide or calculate the EMV of a selection alternative. For every selection alternative, we pick out the weighted average of the payoffs, using the possibilities of the states of nature as wights. Sounds clean? Yes, it is.

The math is worried like this- keep in mind the payoff for the country of nature and multiply it via the opportunity of the country of nature at present. Then consider the payoff for any other state of nature, and multiply it by utilizing the chance of any other form of nature. Add

**Q3a. Explain the concept of perfect information while taking decision under risk with an example? (5 Marks)**

**Ans 3a.**

**Introduction**

Selection policies under uncertainty

Maximin

Laplace criterion

Hurwitz

Maximax

Minimax regret

Selection guidelines under risk

Maximum software

Most predicted price

**Q3b. How to detect and find alternate optimal solution or multiple optimal solutions in simplex? (5 Marks)**

**Ans 3b.**

**Introduction**

A simplex approach is an approach for manually calculating the optimal value of a linear program. The measure produces an optimal answer to meet the given elements and create the most zeta value. Using the pivot and tableau variables, an optimal answer can be reached. To implement this simplex approach, the mentioned linear programming model calls for it to be