**Small Mixed Integer Programming (MIP) Problem**

(Compare Example 6.3 in the text)

* Tetla Auto is considering manufacturing three types of cars (compact, midsize, and large.)
* The resources required and the profits yielded by each type of vehicle are shown in this table. If a type of car is produced, at least the number shown in the required minimum production row must be produced.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compact | Midsize | Large |
| Steel (tons/unit) | 1.5 | 3 | 5 |
| Labor (hours per unit) | 30 | 25 | 40 |
| Required Min production | 500 | 500 | 500 |
| Profit Contribution per unit | $2,000 | $2,500 | $3000 |

The resources available in the time period are as follows:

Steel 6,500 tons

Labor 65,000 hours

Formulate and solve a MIP problem to decide how many autos of each type that Tetla should produce.

**Solution –**

The optimal solution indicate that Tetla should not produce any Midsize and Large cars. The number of 1s in row 13 is for Compact and Midsize Car, that means Tetla should produce at least the minimum number of 1000, here 500 number of Compact car and 500 of Midsize Cars. The company should produce compact cars and midsize cars to meet the minimal production quantities. These vehicles are profitable with the resources they use.

The Maximum optimised Profit is - **$58,80,952.38 for the Tetla motors.**