

Indian Institute of Technology Ropar Department of Mathematics MA303: Computing Lab

2nd semester of academic year 2024-25

Lab Sheet-8 Integer Linear Programming problem

Write a MATLAB code for the following ILPs using Gomory's cutting plane method and give a detailed output.

1.

Maximize
$$Z = 5x_1 + 7x_2$$

subject to $-2x_1 + 3x_2 \le 6$,
 $6x_1 + x_2 \le 30$,
 $x_1, x_2 \in \mathbb{Z}^+ \cup \{0\}$

2.

Maximize
$$Z = x_1 + x_2$$

subject to $2x_1 + 5x_2 \le 16$,
 $6x_1 + 5x_2 \le 30$,
 $x_1 \ge 0$,
 $x_2 \in \mathbb{Z}^+ \cup \{0\}$

3.

$$\begin{array}{ll} \text{Minimize} & Z=10x_1+9x_2\\ & \text{subject to} & x_1\leq 8,\\ & x_2\leq 10,\\ & 5x_1+3x_2\geq 45,\\ & x_1\geq 0,\\ & x_2\in \mathbb{Z}^+\cup\{0\} \end{array}$$

***** End *****