

## Class 2

Use Simplex method to solve the following. Make a **menu driven program** with the following options **(a)** List of all BFS **(b)** Print the initial simplex table **(c)** List of all Non-basic variables in the initial table **(d)** List of Basic variables along with min ratios in the first iteration **(e)** simplex table of the second iteration. **Solve the following manually first.**

1. Maximize  $Z = 2x_1 + 5x_2$ , Subject to  $x_1 + 4x_2 \leq 24$ ,  $3x_1 + x_2 \leq 21$ ,  $x_1 + x_2 \leq 9$ ,  $x_1, x_2 \geq 0$ .
2. Maximize  $Z = 4x_1 + 3x_2 + 6x_3$ , Subject to  $2x_1 + 3x_2 + 2x_3 \leq 440$ ,  $4x_1 + 3x_3 \leq 470$ ,  $2x_1 + 5x_2 \leq 430$ ,  $x_1, x_2, x_3 \geq 0$ .
3. Maximize  $Z = 12x_1 + 15x_2 + 14x_3$ , Subject to  $-x_1 + x_2 \leq 0$ ,  $-x_2 + 2x_3 \leq 0$ ,  $x_1 + x_2 + x_3 \leq 100$ ,  $x_1, x_2, x_3 \geq 0$ .
4. Minimize  $Z = x_1 - 3x_2 + 3x_3$ , Subject to  $3x_1 - x_2 + 2x_3 \leq 7$ ,  $-2x_1 + 4x_2 \leq 12$ ,  $-4x_1 + 3x_2 + 8x_3 \leq 10$ ,  $x_1, x_2, x_3 \geq 0$ .
5. Maximize  $Z = 3x_1 + 2x_2 + 2x_3$ , Subject to  $5x_1 + 7x_2 + 4x_3 \leq 7$ ,  $4x_1 - 7x_2 - 5x_3 \leq 2$ ,  $3x_1 + 4x_2 - 6x_3 \geq 3$ ,  $x_1, x_2, x_3 \geq 0$ .