Solve the linear programming using simplex method:

i. Maximize $Z = 5x_1 + 2x_3$
Subject to the constraints

$3x_1 + 5x_2 \leq 15$
$5x_1 + 2x_2 \leq 10$
and $x_1, x_2 \geq 0$

ii. Maximize $Z = 7x_1 + 5x_2$
Subject to the constraints

$X_1 + 2x_2 \leq 6$
$4x_1 + 3x_2 \leq 12$
And $x_1, x2 \geq 0$

iii. Maximize $Z = 5x_1 + 7x_2$
Subject to the constraints

$2x_1 + 3x_2 \leq 13$
$3x_1 + 2x_2 \leq 12$
and $x_1, x_2 \geq 0$

iv. Maximize $Z = x_1 + X_2 + 3x_2$
Subject to the constraints

$2x1 + 3x_2 \leq 1{,}500$
$3x_1 + 2x_2 \leq 1{,}500$
and $x_1, x_2 \geq 0$

v. Maximize $Z = 3x_1 + 2x_2 + 5X_3$
Subject to the constraints

$X_1 + 2x_2 + x_3 \leq 430$
$3x_1 + 2x_3 \leq 460$
$X_1 + 4x_3 \leq 420$
and $x_1, x_2 \geq 0$

vi. Maximize $Z = x_1 – x_2 + 3x_3$
Subject to the constraints

$X_1 + x_2 + x_3 \leq 10$
$2x_1 – x_3 \leq 2$
$2x_1 – 2x_2 + 3x_3 \leq 0$

and $x_1, x_2 \geq 0$