1 Determine the optimal Solution of A standard MAXIMUM problem from this tableau

$$\left[\begin{array}{ccccccc|c} 0 & 1 & 1 & -2 & 1 & -1 & 0 & 40 \\ 0 & -2 & 0 & 4 & -1 & 3 & 0 & 32 \\ 1 & 1 & 0 & -1 & 1 & 1 & 0 & 63 \\ 0 & 5 & 0 & 6 & 2 & 3 & 1 & 1148 \end{array}\right]$$

(A) MAXIMUM Z = 1148 At (63, 0, 40)
(B) MAXimum Z = 1148 At (40, 32, 63)
(C) MAXimum Z = 1148 At (6, 2, 3)
(D) MAX imum Z = 1148 At (63, 16, 40)

(2) In the following tableau what Are the basic Variables

$$\begin{array}{ccccccc|c} x_1 & x_2 & x_3 & 0 & S_1 & S_2 & & S_3 \quad Z \end{array}$$

$$\left[\begin{array}{cccccc|c} 1 & 1/2 & 1/2 & 1 & 0 & 0 & 50 \\ 0 & 3/2 & -1/2 & & 0 & 0 & 50 \\ 0 & 1 & -1 & 0 & 1 & 0 & 100 \\ 0 & 9 & 11 & 0 & 0 & 1 & 1100 \end{array}\right]$$

(A) X_1, X_2 And X_3
(B) X_1, X_3 And S_2
(C) X_1, S_2, And S_3
(D) S_1, S_2, And S_3

(3) What is the transpose of the following MAtRix

$$\begin{bmatrix} 3 & 1 & 2 \\ 2 & 0 & 5 \\ 1 & -1 & 6 \end{bmatrix}$$

A) $\begin{bmatrix} 1 & -1 & 6 \\ 2 & 0 & 5 \\ 3 & 1 & 2 \end{bmatrix}$ (B) $\begin{bmatrix} 3 & 2 & 1 \\ 1 & 0 & -1 \\ 2 & 5 & 6 \end{bmatrix}$ (C) $\begin{bmatrix} 2 & 1 & 3 \\ 5 & 0 & 2 \\ 6 & -1 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 5 & 2 \\ -1 & 6 & 1 \end{bmatrix}$

(1) Which point is not a corner of the feasible region of the system of inequalities

$x + 2y \le 10$

$3x + y \le 10$

$x \ge 0,\ y \ge 0$

(A) $(10/3, 0)$ (B) $(2,4)$

(C) $(0,5)$ (D) $(10,0)$

(2) The maximum value of $z = 5x + 4y$ subject to

$3x + y \le 24$

$6x + 4y \le 66$

$x \ge 0,\ y \ge 0$ is

(A) 96 (C) 56

(B) 66 (D) 40

(3) The minimum value of $Z = 4x + 10y$ subject to

$3x + y \le 24$

$6x + 4y \le 66$

$x \ge 0,\ y \ge 0$ is

(A) 165 C 44

(B) 110 D 32

(4) Maximize $Z = 14x + 22y$ subject to

$2x + 2y \ge 20$

$8x + 5y \le 40$

$x \ge 0,\ y \ge 0$

This linear programming problem has

A) Unique Solution (B) Multiple Solution

(C) Unbounded Solution (D) Feasible Solution

(5) When the constraint $6x_1 + 17x_2 \le 28$ is converted to an equation the equation is

A) $6x_1 + 17x_2 = 28$ (C) $6x_1 + 17x_2 + s_1 = 28$

(B) $6x_1 + 17x_2 - 28 = 0$ (D) $6x_1 + 17x_2 - s_1 = 28$

1 The Pivot Row is Row ____ of the following tableau

$$\left[\begin{array}{ccccccc|c} 2 & 5 & 0 & 1 & 0 & -2 & 0 & 66 \\ 1 & 6 & 0 & 0 & 1 & -2 & 0 & 66 \\ 2 & -2 & 1 & 0 & 0 & 1 & 0 & 32 \\ \hline -1 & 8 & 0 & 0 & 0 & 3 & 1 & 396 \end{array}\right]$$

A) 1 (C) 3
B 2 (D) 4

(2) Find the pivot element of the tableau

$$\left[\begin{array}{ccccccc|c} 6 & 3 & 1 & 1 & 0 & 0 & 0 & 24 \\ 5 & 2 & 6 & 0 & 1 & 0 & 0 & 24 \\ 1 & 3 & 4 & 0 & 0 & 1 & 0 & 24 \\ \hline -6 & -5 & -9 & 0 & 0 & 0 & 1 & 0 \end{array}\right]$$

A) 1 in Row 1, Column 3
(B) 6 in Row 2, Column 3
(C) 4 in Row 3, Column 3
(D) -9 in Row 4, Column 3

(3) ~~Find the pivot Elements~~
(3) Pivot on the Appropriate Entry to find the Next Tableau

$$\left[\begin{array}{cccccc|c} 2 & 1 & 2 & 1 & 0 & 0 & 330 \\ 1 & 2 & 2 & 0 & 1 & 0 & 330 \\ -2 & -2 & 1 & 0 & 0 & 0 & 132 \\ \hline -1 & -2 & -3 & 0 & 0 & 1 & 0 \end{array}\right]$$

A) $\left[\begin{array}{ccccccc|c} 1 & 1/2 & 1 & 1/2 & 0 & 0 & 0 & 165 \\ -1 & 1 & 0 & -1 & 1 & 0 & 0 & 0 \\ -3 & -5/2 & 0 & -1/2 & 0 & 1 & 0 & -33 \\ \hline 2 & -1/2 & 0 & 3/2 & 0 & 0 & 1 & 495 \end{array}\right]$

(B) $\left[\begin{array}{ccccccc|c} 1 & -1 & 0 & 1 & -1 & 0 & 0 & 0 \\ 1/2 & 1 & 1 & 0 & 1/2 & 0 & 0 & 165 \\ -5/2 & -3 & 0 & 0 & -1/2 & 1 & 0 & -33 \\ \hline 1/2 & 1 & 0 & 0 & 3/2 & 0 & 1 & 495 \end{array}\right]$

(C) $\left[\begin{array}{ccccccc|c} 6 & 5 & 0 & 1 & 0 & -2 & 0 & 66 \\ 5 & 6 & 0 & 0 & 1 & -2 & 0 & 66 \\ -2 & -2 & 1 & 0 & 0 & 1 & 0 & 132 \\ \hline -7 & -8 & 0 & 0 & 0 & 3 & 1 & 396 \end{array}\right]$

(1) Write the initial simplex tableau of the following problem. MAXIMIZE $Z = 12x_1 + 25x_2$ subject to

$5x_1 + 7x_2 \;{}^{2}\!\le 65$

$3x_1 + 4x_2 \le 50$

$x_1 + 3x_2 \le 48$

$x_1 \;{}^{3}0,\; x_2 \ge 0$

(A) $\left[\begin{array}{cccccc|c} 12 & 25 & 1 & 0 & 0 & 0 & 0 \\ 5 & 7 & 0 & 1 & 0 & 0 & 65 \\ 3 & 4 & 0 & 0 & 1 & 0 & 50 \\ \hline 1 & 3 & 0 & 0 & 0 & 1 & 48 \end{array}\right]$

(B) $\left[\begin{array}{cccccc|c} 5 & 7 & 1 & 0 & 0 & 0 & 65 \\ 3 & 4 & 0 & 1 & 0 & 0 & 50 \\ 1 & 3 & 0 & 0 & 1 & 0 & 48 \\ \hline -12 & -25 & 0 & 0 & 0 & 1 & 0 \end{array}\right]$

(C) $\left[\begin{array}{cccccc|c} 5 & 7 & 1 & 0 & 0 & 0 & 65 \\ 3 & 4 & 0 & 1 & 0 & 0 & 50 \\ 1 & 3 & 0 & 0 & 1 & 0 & 48 \\ \hline 12 & 25 & 0 & 0 & 0 & 1 & 0 \end{array}\right]$

(2) Find the pivot column of the tableau

$\left[\begin{array}{ccccccc|c} 0 & 3 & -1/2 & 1 & -1 & 0 & 0 & 5 \\ 1 & 1 & 1/2 & 0 & 2 & 0 & 0 & 16 \\ 0 & 4 & 3/2 & 0 & -4 & 1 & 0 & 22 \\ \hline 0 & -2 & -8 & 0 & 9 & 0 & 1 & 49 \end{array}\right]$

A) Column 1 (C) Column 3

B) Column 2 (D) Column 4

(3) Find the pivot row of the tableau

$\left[\begin{array}{ccccccc|c} 3 & 2 & 6 & 1 & 0 & 0 & 0 & 18 \\ 5 & 1 & 4 & 0 & 1 & 0 & 0 & 20 \\ 4 & 8 & 10 & 0 & 0 & 1 & 0 & 40 \\ \hline -6 & -6 & -12 & 0 & 0 & 0 & 1 & 0 \end{array}\right]$

(A) Row 1 (C) Row 3

(B) Row 2 (D) Row 4