

**Question No 1:**

Define the two phase method and Big M method and explain why we prefer two phase method over Big M Method.

**Question No 2:**

Transform the following linear programming problem in the first Phase by following the two phase method

$$\text{Minimize. } Z = x_1 + x_2$$

*Subject to :*

$$2x_1 + x_2 \geq 4$$

$$x_1 + 7x_2 \geq 7$$

$$x_1, x_2 \geq 0$$

**Question No 3:**

By using the two phase method express the objective function of the linear programming problem in terms of non-basic variables in first phase.

$$\text{Minimize } Z = 4x + y$$

*Subject to :*

$$3x + y = 3$$

$$4x + 3y \geq 6$$

$$x + 2y \leq 4$$

$$x, y \geq 0$$

**Question No 4:**

Write standard form of first phase of following linear programming problem.

$$\text{Minimize } Z = 4x_1 + x_2 + x_3$$

*Subject to :*

$$2x_1 + x_2 + 2x_3 = 4$$

$$3x_1 + 3x_2 + x_3 = 3$$

$$x_1, x_2, x_3 \geq 0$$