Phase I

Step 1:
   a. If the given LP is at minimization convert it to maximization.
   b. If all the constraints of the given LP are $\leq$ type then directly proceed to phase II otherwise introduce necessary surplus and artificial variable.

Step 2:
Assign zero coefficient to the actual decision variables and surplus variables and -1 to the artificial variables.

Auxiliary problem: Maximize $Z' = \sum_{i=1}^{m} (-1)x_i$

where x_i is the ith artificial variable

Step 3:
Apply the simplex and reach the optimal state.
Now, three cases can arrive:
   1. Max $Z' = 0$ and at least one artificial variable is present with the base with positive value, then no feasible solution exists.
   2. Max $Z' = 0$ and no artificial variable is present in the base. Then proceed to phase II to obtain optimal solution.
   3. Max $Z' = 0$ and at least one artificial value in present in the base with zero value. This indicates feasible solution of the auxiliary LP problem is also a solution of the given LP problem in order to arrive at the basic feasible solution, proceed directly to phase II or else eliminate the artificial variable and then proceed to phase II.

Phase II

Step 1:
Assign actual coefficients to the variables as per the objective function and zero coefficient to the artificial variable which appear at zero value in the base at the end of phase I.

Step 2:
The last simplex table of phase I can be used as the initial table for phase II.