# Frequently Asked Questions

1. What is the objective of transportation problem?
   **Answer:**
   The objective of transportation problem is to minimize the total transportation cost; we must try to transport as much as possible through these routes (cells) where the unit transportation cost is minimum.

2. What do you mean by least cost method?
   **Answer**:
   The least cost method takes into account the minimum unit cost of transportation for obtaining the initial basic feasible solution.

3. What is the first step in the least cost method?
   **Answer:**
   The first step in the least cost method is to select the cell with the lowest unit cost in the entire transportation table and allocate as much as possible to this cell. Then eliminate (line out) that row or column in which either supply or demand is exhausted.

4. How do we cross the row and column when exhausted simultaneously?
   **Answer:**
   If a row and column are both satisfied simultaneously, then only one may be crossed out. In case the smallest unit cost cell is not unique, then select the cell where maximum allocation can be made.

5. What is Vogel's approximation method?
   **Answer:**
   Vogel's approximation method (penalty or regret method) is a heuristic method and is preferred to the other two methods North West corner method and least cost method.

6. How is the allocation made in the Vogel's Approximation method?
   **Answer:**
   In this method each allocation is made on the basis of the opportunity (or penalty or extra) cost that would have incurred if allocation in certain cells with minimum unit transportation cost were missed. In this method allocations are made so that penalty cost is minimized.

7. What is the advantage of Vogel's Approximation method?
   **Answer:**
   The advantage of this method is that it gives an initial solution which is nearer to an optimal solution or is the optimal solution itself.

8. How do we calculate the penalties?
   **Answer:**
   Calculate penalties for each row (column) by taking the difference between the smallest and next smallest unit transportation cost in the same row (column).

9. What does the penalty indicate?
   **Answer:**
   The difference indicated or the penalty is the extra cost which has to be paid if one fails to allocate to the cell with the minimum unit transportation cost.

10. How do we allocate when the penalties are in tie?

    **Answer:**

    If there is a tie in the values of penalties then it can be broken by selecting the cell where maximum allocation can be made.

11. When a row or column is defined zero?

    **Answer:**

    If a row and a column are satisfied simultaneously, only one of them is crossed out and the remaining row (column) is assigned a zero supply (demand).

12. What is the impact of a zero row or column?

    **Answer:**

    Any row or column with zero supply or demand should not be used in computing future penalties.

13. When do we reach an optimal solution?

    **Answer:**

    If all the net changes computed are greater than or equal to zero an optimal solution has been reached. If not it is possible to improve the current solution and decrease the total transportation cost.

14. How do we calculate the net change cost?

    **Answer:**

    Assign plus (+) and minus (-) signs alternatively on each corner cell of the closed path just traced, beginning with the plus sign at the unoccupied cell to be evaluated. Add the unit transportation costs associated with each of the cell traced in the closed trace path. This will give the net change terms of cost.

15. When do we say a solution is non-degenerate?

    **Answer:**

    When the number of occupied cells is equal to m plus n minus 1 where m is the number of rows and n is the number of columns then the solution is said to be non degenerate.