**Problem 1**

Question 1:

This query generates the customers who are in the different city other than sales representative’s city.

Design: customer and Employee Number details can be obtained by joining customers and employees table and further join with the offices table using office code to get the employee city details. Check the condition with the city which is not same.

Question 2:

This query generates the orders included sales that are below the manufacturer’s suggested retail price (MSRP).

Design: join products and order details table using product code and check with the price which is less than the MSRP and finally group by order number to retrieve order details.

Question 3:

This query generates the top 5 products for 2004 with the highest average mark-up percentage per order.

Design: extract the orders that are ordered in 2004 by joining orders and order details using order number. Obtain the product code and product name details that have top 5 average mark up percentage, where mark-up is the ratio of (sale price – cost) and cost, by joining with products table using product code and group by product code.

Question 4:

This query generates top 3 employees with the greatest average diversity of products in their orders.

Design: extract the customers average density of products in their orders by joining the orders and order details table using order number and grouping by the order number. Further join this table with the customers table using customer to get the sales employee number and again join the resulted table with the employees table with respect to the employee number and get the name details.

Question 5:

This query generates the average time needed to ship orders from each office in 2005, relative to the order date.

Design: Initially calculate the number of days required for each order in the year 2005 and join with the employees and customers table combined using customer number to obtain the office code and number of days required which is grouped by office code and further join with the office table to obtain the city of each office.