**Tableau Exam Solutions**

1. Area Graphs and Line Graphs in Tableau:

Area Graphs:

Area graphs are similar to line graphs but with the area below the line filled in with color. The filled area emphasizes the magnitude or proportion of the data, making it easier to compare the values between different series or categories.

To create an area graph in Tableau, follow these steps:

Step 1: Connect to data source and drag the relevant dimensions and measures onto the Rows and Columns shelves.

Step 2: Arrange the dimensions in the desired order on the Columns shelf.

Step 3: Place the continuous measure you want to display over time on the Rows shelf.

Step 4: Click on the "Show Me" button in the top right corner of the Tableau interface and select the Area graph option.

Step 5: Customize graph by adding color, labels, tooltips, and other formatting options.

**Example: Region wise distributions of sales shown by Area Chart in i)a] Area Chart Worksheet.**

Line Graphs:

Line graphs are used to show trends and changes in data over time or any continuous variable. They use points connected by lines to display the values of a measure or multiple measures.

To create a line graph in Tableau, follow these steps:

Step 1: Connect to data source and drag the relevant dimensions and measures onto the Rows and Columns shelves.

Step 2: Place the continuous measure you want to display over time on the Rows shelf.

Step 3: Place the dimension representing time or any continuous variable on the Columns shelf.

Step 4: Click on the "Show Me" button in the top right corner of the Tableau interface and select the Line graph option.

Step 5: Customize graph by adding labels, tooltips, color, and other formatting options.

**Example: Monthly Sales shown by Line Chart in i)b] Line Chart Worksheet.**

1. Grouping Fields:

Grouping fields in Tableau allows you to combine data points into logical groups, which can be useful for aggregating data and simplifying visualizations. By creating groups, you can reduce the number of individual data points and focus on larger categories or segments.

To group fields in Tableau, follow these steps:

Step 1: Select the fields you want to group. These can be dimensions or discrete measures.

Step 2: Right-click on the selected fields and choose the "Group" option from the context menu.

Step 3: Tableau will automatically create a new group containing the selected fields.

Step 4: Rename the group if desired, and adjust the group membership by dragging and dropping additional fields or removing existing fields.

Step 5: Use the grouped field in your visualizations or calculations.

Example: **sales and profit drag into column and row then choose paper sub- category as a group. It shown by scatter plot in ii) Grouping Field worksheet.**

1. The color and size options in the Marks card in Tableau provide additional visual encoding capabilities, allowing to represent data values using different colors and sizes. These options are useful for adding an extra layer of information and enhancing the visual impact of visualizations.

Color Option:

The color option in the Marks card allows you to assign colors to different data points or categories. By mapping a specific dimension or measure to color, you can distinguish and highlight different elements in your visualization. Colors can represent different categories, values, or levels of a variable, making it easier to identify patterns, trends, or outliers.

Size Option:

The size option in the Marks card allows you to vary the size of data points based on a specific measure. By mapping a measure to size, you can visually represent the magnitude, importance, or significance of data points. Sizes can be used to highlight variations or emphasize specific data points in a visualization.

**Example: I have used symbol map in which sales are drag into the size mark and region are drag into color mark so it shows region wise sales with circles having different size in iii) use of color and size mark worksheet.**

1. Tableau supports different types of joins to combine data from multiple tables or data sources. The supported join types are:

Inner Join:

An inner join returns only the matching rows between two tables based on a specified join condition. It excludes rows that do not have a match in both tables.

Left Join:

A left join returns all rows from the left (or first) table and the matching rows from the right (or second) table based on a specified join condition. If there is no match in the right table, null values are returned.

Right Join:

A right join returns all rows from the right (or second) table and the matching rows from the left (or first) table based on a specified join condition. If there is no match in the left table, null values are returned.

Full Outer Join:

A full outer join returns all rows from both tables, including the matching and non-matching rows, based on a specified join condition. If there is no match in either table, null values are returned.

Example: Using the same "Orders" and "Customers" tables, let's say you want to retrieve all orders and all customer information, regardless of whether they are associated with each other.

Open Tableau and connect to your data sources.

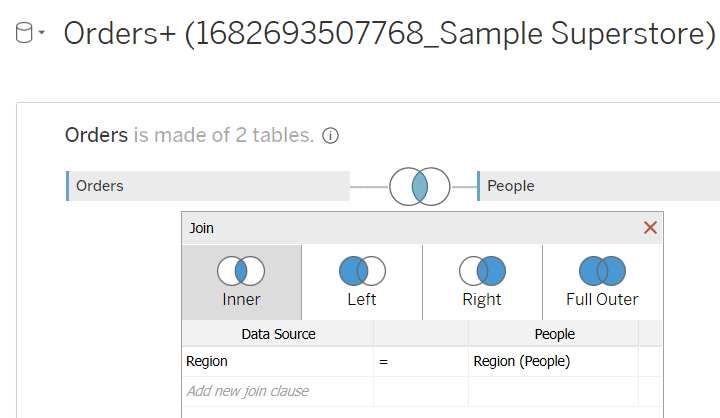
Drag the "Orders" table to the canvas.

Drag the "Customers" table onto the "Orders" table.

Right-click on the join line between the two tables and select "Full Outer Join."

Customize the join condition if needed.

Start analyzing the combined data, which will include all orders and all customer information, with null values for non-matching rows.



1. Creating a Dashboard in Tableau:

A dashboard in Tableau is a collection of visualizations and other components arranged on a single canvas to provide a comprehensive view of data. Dashboards allow us to bring multiple insights together and create a unified presentation for data analysis and storytelling.

To create a dashboard, click on the "New Dashboard" button or select "Dashboard" from the "New Worksheet" dropdown. The dashboard canvas will appear. Drag the worksheets created in Step 2 onto the dashboard canvas.

Example: Drag the bar chart representing sales by region and the heat map onto the dashboard canvas.

To Organize and Format the Dashboard:

Arrange the worksheets on the dashboard canvas by resizing, repositioning, and aligning them as desired. Use containers, horizontal or vertical layout objects, or floating objects to control the layout and structure of the dashboard. Customize the title, captions, and tooltips for clarity and context.

Add Interactivity and Navigation:

Enhance the dashboard by adding interactivity and navigation elements. Include filters, parameters, and action filters to allow users to explore the data dynamically. Use dashboard actions to establish interactions between different visualizations.

Finalize and Share the Dashboard:

Review the dashboard for consistency, coherence, and clarity. Make any necessary adjustments to ensure the dashboard effectively communicates insights. Save the dashboard, and then share it with others by publishing it to Tableau Server, Tableau Public, or exporting it in various formats (PDF, image, etc.).

I created dashboard having name **v) Dashboard**.

1. Heat Maps:

A heat map is a graphical representation of data where the individual values are represented as colors within a matrix. Heat maps are particularly useful for visualizing data patterns, relationships, and distributions across two dimensions.

To create a heat map in Tableau, follow these steps:

Step 1: Connect to Data:

Connect to your data source in Tableau by clicking on the "Connect to Data" button and selecting the appropriate data connection method.

Step 2: Drag Dimensions and Measures:

Drag the dimensions that define the rows and columns of your heat map to the Rows and Columns shelves, respectively. These dimensions will determine the categories or values to be displayed on the heat map.

Step 3: Add the Measure:

Drag the measure that represents the values you want to visualize onto the Color shelf. This measure will determine the intensity or density of the colors on the heat map.

Step 4: Adjust Color Encoding:

Customize the color encoding by selecting a color palette or defining a custom color range. This will determine how the values are mapped to different colors on the heat map.

Step 5: Format and Customize:

Format the heat map by adjusting the font, size, and gridlines. Add labels, tooltips, and legends to provide additional information and context to the visualization.

Example: **Heat Map are shown** **in vi)a] Heat Map worksheet**

Scatter Plot:

A scatter plot is a two-dimensional plot that displays the relationship between two numeric variables. Each data point is represented as a dot on the plot, with one variable mapped to the X-axis and another variable mapped to the Y-axis.

To create a scatter plot in Tableau, follow these steps:

Step 1: Connect to Data:

Connect to your data source in Tableau by clicking on the "Connect to Data" button and selecting the appropriate data connection method.

Step 2: Drag Dimensions and Measures:

Drag the dimensions that represent the X-axis and Y-axis variables to the Columns and Rows shelves, respectively.

Step 3: Customize Marks:

In the Marks shelf, select the "Circle" mark type or any other suitable mark type to represent the data points on the scatter plot.

Step 4: Add Additional Variables:

Drag additional dimensions or measures to the Color, Size, or Shape shelves to add more information to the scatter plot. These variables can represent additional dimensions or categories that you want to analyze or compare.

Example: Scatter Plot are shown in **vi)b]** **Scatter** **Plot** worksheet.

1. Table calculations in Tableau allow you to perform calculations on the data within a visualization, taking into account the dimensions, measures, and other variables in the view. These calculations can include aggregations, percent differences, running totals, and more.

Add a Table Calculation:

To create a table calculation, right-click on a measure in the visualization and select "Add Table Calculation." Alternatively, you can click on the drop-down arrow next to the measure in the Marks shelf and choose "Add Table Calculation."

Here I created Profit ratio calculation field using formula **sum([Profit])/sum([Sales]).** I have shown it in **vii) Calculated field worksheet.**

1. Distribution bands in tableau

Distribution Bands allow users either to create bands as one or more multiples of a previous aggregate (for instance, 50%, 100%, or 150% of the median) or to create lines or bands based on statistical measures (for instance, percentiles, quantiles, and standard deviation).

After plotting graph click on analytics then click on Distribution band then choose value as quantile. It is shown in **vii) Distribution Band** worksheet.

1. Creating a Bar Chart and Pie Diagram in Tableau:

Bar charts and pie diagrams are common visualization types used to represent categorical data in Tableau. A bar chart displays data using rectangular bars of lengths proportional to the values they represent, while a pie diagram represents data as slices of a circle, with each slice representing a category and its size indicating the proportionate value.

Example: Bar chart are shown **in ix)a] Bar Chart** and pie chart are shown in **ix)b] Pie chart** worksheet.

For bar chart drag region into column and profit into row. Then use show me option click on bar chart it gives region wise profit.

For pie chart drag segment into column and sales into row then use show me option click on pie chart it gives segment wise sales.

1. Adding story points to a dashboard in Tableau allows you to create a narrative flow and guide viewers through a sequence of visualizations and insights. Story points enable you to present a coherent story using a combination of worksheets, text, images, and annotations.

Create a Dashboard:

Create a dashboard by clicking on the "New Dashboard" button or selecting "New Dashboard" from the "Dashboard" dropdown menu. This will provide a canvas to arrange and organize your story points.

Add Story Points:

In the dashboard layout, locate the "Story Points" tab at the bottom of the canvas. Click on the "+" button to add a new story point.

Design and Arrange:

Within each story point, add the desired worksheets, text, images, or annotations by dragging and dropping them onto the canvas. You can also resize and rearrange the elements to create an engaging and coherent story flow.

I have created story having name **x) story.**