Date of Performance	:
Date of Completion	:

Experiment No. : 01

Title : To Study and Demonstrate fundamentals in Microsoft excel

Theory :

The goal of this experiment is to familiarize with the basic functionalities of Microsoft Excel, a powerful spreadsheet application widely used for data analysis, calculations, & visualization. Understanding these fundamentals is crucial for effective data management and analysis in various fields, including business, engineering, and sciences.

Excel provides a user-friendly that allows users to perform a variety of tasks including:

i) Data Entry & Editing
ii) Basic Calculations
iii) Data Formatting
iv) Data Management
v) Charting
vi) Data Analysis Tools

By mastering these fundamentals, you will be equipped to utilize Excel for more complex tasks in future.

1. Basic Operations:
   - Creating and saving workbooks
   - Entering and editing data
   - Basic calculations (sum, average, count)
   - Formatting cells (number, text, date)

2. Functions:
   - SUM, AVERAGE, COUNT, MAX, MIN
   - IF, IFERROR, IFBLANK
   - VLOOKUP, INDEX/MATCH

- Basic charting (columns, lines, pie)

3. Data Management:
   - Sorting and filtering data
   - Creating and managing tables
   - Data validation (drop-down lists, input restrictions)
   - Basic pivot tables

4. Formulas and Functions:
   - Relative and absolute references
   - Basic formula writing (e.g., =A1+B1)
   - Using named ranges and references
   - Array formulas

5. Charts and Graphs:
   - Creating and customizing charts
   - Using different chart types (e.g., bar, line, pie)
   - Adding titles, labels, and legends

6. Data Analysis:
   - Using conditional formatting
   - Creating and managing scenarios
   - Basic data analysis (e.g., trend analysis, goal seek)

7. Shortcuts and Productivity:
   - Basic keyboard shortcuts (e.g., Ctrl+S, Ctrl+C)
   - Using the Quick Access Toolbar
   - Customizing the Excel interface

To demonstrate these fundamentals, you can create a sample workbook that showcases each of these skills.

For example:

1) Create a table with sample data and demonstrate sorting, filtering, and data validation.

Write Steps :

1. Create a Table : Enter sample data (Name, Age, Score) in Excel and select the range. Click "Insert" > "Table".
2. Sorting : Click the drop-down arrow in the Age or Score column header to sort.
3. Filtering : Use the drop-down arrow in any column header to filter specific values.
4. Data Validation : Select the Age column, go to "Data" > "Data Validation", choose "Whole number", set between 18 and 100, & click "OK".

2) Write formulas to calculate sums, averages, and counts, and demonstrate how to use named ranges and references.

Write Steps :

1. Calculate Sum : Use '=SUM(A1:A10)' to sum values.
2. Calculate Average : Use '=AVERAGE(B1:B10)' for the average.
3. Count Values : Use '=COUNT(C1:C10)' to count.
4. Named Range : Select a range, name it (e.g., "Scores"), then use in formulas like the '=SUM(Scores)'.
5. References : Use relative (e.g. '=A1+B1') or absolute references (e.g., '=A1').

3) Create a chart to visualize data and customize it with titles, labels, and legends.

Write Steps :

1. Select Data : Highlight the data range for chart.
2. Insert Chart : Go to "Insert" and choose a chart type.
3. Add Titles : Click on the chart title to edit it.
4. Add Labels : Use "Chart Design" > "Add Chart Element" > "Data Labels".
5. Add Legends : Use "Chart Design" > "Add Chart Element" > "Legend".

4) Use conditional formatting to highlight important data points.

Write Steps :

1. Select Data : Highlight the data range.
2. Open Conditional Formatting : Go to "Home" > "Conditional Formatting".
3. Choose Rule : Select a rule type. (e.g. "Highlight").
4. Set Condition : Define the criteria and choose a formatting style.
5. Apply : Click "OK" to highlight important data points.

5) Create a pivot table to summarize and analyze data.

Write Steps :

1. Select Data : Highlight the data range.
2. Insert Pivot Table : Go to "Insert" > "PivotTable".
3. Set Up Fields : Drag fields to "Rows", "Columns", and "Values" areas.
4. Customize Layout : Use "PivotTable Analyze" and "Design" tabs for layout options.
5. Filter Data : Apply filters to focus on specific data points.

Conclusion :

The experiment effectively demonstrated the fundamentals of Excel, enabling participants to perform essential tasks such as data entry, formula creation, and data visualization. Also gain experience with functions and pivot tables.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Date of Performance	:
Date of Completion	:

Experiment No. : 02

Title : To study and demonstrate Entering and editing text and formulas.

Theory :

The purpose of this experiment is to familiarize students with the fundamental operations of entering and editing text and formulas in Microsoft Excel. As a widely used spreadsheet application, Excel allows users to perform a variety of tasks, including data entry, calculation, and data analysis. Understanding how to effectively use text and formulas is crucial for leveraging Excel's full potential.

Demonstration Techniques

- Use a sample workbook to illustrate the process of entering text and formulas.
- Highlight the active cell during data entry for clarity.
- Utilize the formula bar for real-time visibility of entered formulas.
- Employ the "Evaluate Formula" tool to demonstrate how Excel calculates results step-by-step.

Entering Text:

1. Open a new Excel workbook or select a cell in an existing workbook.
2. Type a text string (e.g., "Hello, World!") into the selected cell.
3. Press Enter to confirm the entry.
4. Observe how the text is displayed in the cell.
5. Experiment with different font styles, sizes, and colors using the Home tab.

Entering Formulas:

1. Select a cell where you want to enter a formula.
2. Type an equals sign (=) to indicate the start of a formula.
3. Enter a simple arithmetic operation (e.g., =2+2).
4. Press Enter to confirm the formula.
5. Observe the calculated result in the cell.
6. Experiment with different formulas, such as:
   - Basic arithmetic (e.g., =3*4, =10/2)
   - Using cell references (e.g., =A1+B1)
   - Using functions (e.g., =SUM(A1:A10), =AVERAGE(B1:B10))

Demonstration Tips:

- Use a sample workbook to demonstrate entering text and formulas.
- Highlight the cell where you're entering the text or formula.
- Use the formula bar to show the formula as you enter it.
- Use the "Evaluate Formula" tool (Formulas tab > Evaluate Formula) to step through the calculation process.
- Use different formatting options (e.g., number formatting, conditional formatting) to enhance the display of results.

Best Practices:

- Always start a formula with an equals sign (=).
- Use cell references instead of hardcoding values.
- Use functions to simplify calculations and reduce errors.
- Use parentheses to group calculations and follow the order of operations (PEMDAS).

Explain stepwise process to evaluate the formulas

To evaluate formulas in Excel quickly, follow these steps:

1. Select the Cell: Click on the cell with formula.
2. Open Evaluate Formula Tool: Go to the formulas tab and click Evaluate Formula.
3. Click Evaluate: Press Evaluate to step through each part of the formula.
4. Review Results: Check the final result displayed in the dialog box.
5. Close the Tool: Click Close to exit.

Conclusion :

The experiment effectively illustrate the process of entering and editing text and formulas in Excel, emphasizing the importance of using cell references and functions for efficient data manipulation.

CA(15)	**Attendance(15)**	**Performance (10)**	**Oral(10)**	**Out of (50)**
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Demonstration Exercise:

Create a sample worksheet with the following data:

Name	Age	Score
Sandip	25	60
Mangesh	30	70
Kunal	28	75

Demonstrate the following:

1. Calculate the sum of scores using SUM function.
2. Calculate the average age using AVERAGE function.
3. Count the number of students using COUNT function.
4. Find the maximum score using MAX function.
5. Use IF function to determine if a student's score is greater than 80.
6. Insert a new row and column.
7. Format cells using number, text, and border formatting.
8. Sort and filter data.

Steps:

1. Sum of Scores: In cell D1, enter '=SUM(C2:C4)' (result: 205).
2. Average Age: In cell D2, enter '=AVERAGE(B2:B4)' (result: 27.67).
3. Count Students: In cell D3, enter '=COUNT(A2:A4)' (result: 3).
4. Maximum Score: In cell D4, enter '=MAX(C2:C4)' (result: 75).
5. IF Function for Scores > 80: In E1, label it "Result". In E2, enter '=IF(C2>80, "Yes", "No")' and drag down (results: "No" for all).
6. Insert a New Row and Column:
   - Right-click row number 3 and select "Insert" to add a new row.
   - Right-click column D and select "Insert" to add a new column.
7. Format Cells: Select all data (A1:E4) and apply number formatting, bold text, and borders using options in the Home tab.

8. Sort and Filter Data :

- Select any cell in your data range, go to the Data tab, and click "Sort" to sort by "Score" in descending order.
- Click on the dropdown in the header to filter scores greater than 60.

Conclusion :

These steps illustrate how to utilize basic Excel functions and modify worksheets effectively, enhancing data management skills essential for analysis and reporting tasks.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

- Ctrl+1 (or right-click on cell > Format Cells)

Demonstration Exercise:

Exercise : Create a sample worksheet with the following data:

Employee	Salary	Department	Hire Date
ABC	50000	Sales	2020-01-01
XYZ	60000	Marketing	2019-06-01
PQR	45000	Purchase	2021-03-01

Demonstrate the following formatting techniques:

Number Formatting:

1. Format Salary column to currency ($).
2. Format Hire Date column to date (MM/DD/YYYY).

Text Formatting:

1. Change font to Arial.
2. Increase font size to 12.
3. Center-align Employee column.

Border Formatting:

1. Add a border around the entire table.
2. Change border style to double.

Fill Formatting:

1. Fill Department column with a light gray background.

Conditional Formatting:

1. Highlight cells in Salary column > $50,000.

Formatting Steps :

1. Format Salary to Currency :
   - Select B2 : B4, right-click, "Format Cells", choose "Currency" click OK.
2. Format Hire Date to MM/DD/YYYY :
   - Select D2 : D4, right-click, "Format Cells", choose "Date", select MM/DD/YYYY, click OK.
3. Change Font to Arial :
   - Select A1 : D4, go to Home tab, select "Arial".

4. Increase Font Size to 12:
   - Change font size to 12 in the Home tab.
5. Center-align Employee Column:
   - Select A2:A4, click "Center" in the Home tab.
6. Add Border Around Table:
   - Select A1:D4, go to Borders and select "All Borders".
7. Change Border Style to Double:
   - Select Borders again, choose double line style.
8. Fill Department Column with Light Gray:
   - Select C2:C4, click Fill Color, choose light gray.
9. Highlight Salaries > $50,000:
   - Select B2:B4, go to Conditional Formatting > Highlight Cells Rules > Greater Than, enter '50,000', choose a format style, click OK.

Conclusion :

This experiment provided with a solid foundation in Excel formatting techniques, which are critical for creating effective spreadsheets in both academic and professional settings.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Experiment No. : 05	Date of Performance : Date of Completion :

Title : To study and demonstrate introduction to Power BI, basic charts in Power BI, working with maps, Tables and Matrix in Power BI

Theory :

Introduction to Power BI:

Power BI is a powerful business analytics tool that enables users to visualize data & share insights across their organization or embed them in an app or website. This experiment will explore how to effectively use visualizations to represent data meaningfully.

Importance of Data Visualization :
Data visualization is crucial in transforming raw data into understandable insights. It helps in identifying trends, patterns, & outliers within datasets, facilitating better decision-making. In Power BI, various chart types (e.g., bar charts, line graphs, pie charts) serve different analytical purposes.

Types of Visualizations in Power BI :
Power BI offers several built-in visualizations :
i) Basic Charts
ii) Maps
iii) Tables
iv) Metrics

Basic Charts in Power BI:

1. Column Chart
2. Bar Chart
3. Line Chart

1. Column Chart : Sales by Region
   - Open Power BI, and load "Retail Analysis".
   - Select Clustered Column Chart.
   - Drag Region to Axis, Sales to Values.
2. Map : Sales by Location
   - Choose Map.
   - Drag Location to Location, Sales to Size.
3. Table : Top-Selling Products
   - Select the Table visualization.
   - Drag Product Name, Sales, & Quantity Sold into the table.
   - Sort by sales or quantity.
4. Matrix : Sales by Category and Region
   - Choose the Matrix Visualization.
   - Drag Product Category to Rows, Region to Columns, and Sales to Values.

Conclusion :

These steps illustrate how to create various visualizations in Power BI using the "Retail Analysis" dataset. Each visualization serves a specific analytical purpose, enhancing your ability to interpret data effectively.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

- Dropdown
- List
- Range

Advanced Charts in Power BI:

1. Gauges: Display progress toward a goal.
2. KPIs: Display key performance indicators.
3. Scatter Plot with Play Axis: Animates data over time.
4. ArcGIS Maps: Integrates with Esri ArcGIS.
5. Q&A: Natural language query interface.

Demonstration Exercise:

Use the built-in sample dataset "Retail Analysis" to demonstrate:

1. Creating an area chart to show sales over time.
2. Creating a waterfall chart to show profit margins.
3. Creating a treemap to display product categories.
4. Creating a KPI card to display sales targets.
5. Applying filters and slicers to analyze data.

1. Area Chart for Sales Over Time :
   - Load dataset, select Area Chart.
   - Drag 'Order Date' (Axis) and 'Sales' (Values).
2. Waterfall Chart for Profit Margins :
   - Select Waterfall Chart
   - Drag 'Product Category' and 'Profit' (Values).
3. Treemap for Product Categories :
   - Choose Treemap.
   - Drag 'Product Category' and 'Sales' (Values).
4. KPI Card for Sales Targets :
   - Select Card visualization.
   - Drag 'Sales Target' to Values.
5. Filters and Slicers :
   - Add a Slicer, drag field like 'Region'.
   - Configure slicers and apply filters as

needed.

Conclusion :

This exercise effectively showcases key visualizations in Power BI, enabling dynamic data analysis through interactive charts & slicers. Users can gain valuable insights into sales performance and profit margins.

CA(15)	**Attendance(15)**	**Performance (10)**	**Oral(10)**	**Out of (50)**
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Power Query Date Functions

1. TODAY: Current date
2. NOW: Current date and time
3. DATE: Create date from year, month, day
4. DATEADD: Add days, months, years
5. DATEDIFF: Calculate date difference
6. DATEFORMAT: Format date
7. YEAR/MONTH/DAY: Extract date components

Demonstration Exercise

Use the built-in sample dataset "Retail Analysis" to demonstrate:

1. Creating visualizations (tables, charts, maps)
2. Adding slicers and filters
3. Using text functions (LEFT, RIGHT, FIND)
4. Using date functions (TODAY, DATEADD, DATEDIFF)
5. Publishing report to Power BI Service
6. Sharing report with others

1. Creating Visualizations :
   - Load Dataset : Open "Retail Analysis".
   - Create : Use table, chart, & map visuals.
2. Adding Slicers and Filters :
   - Add Slicer : Select a field for the slicer.
   - Apply Filters : Use the filters pane.
3. Using Text Functions :
   - DAX Formulas : Create columns with : LEFT(), RIGHT(), FIND().
4. Using Date Functions :
   - DAX Formulas : Create columns with : TODAY(), DATEADD(), DATEDIFF().
5. Publishing Report :
   - Publish : Click "Publish" in Power BI Desktop.
6. Sharing Report :
   - Share : Use the "Share" option in Power BI service.

Conclusion :

The experiment demonstrates how Power BI

effectively transform raw data into insightful visualizations, highlighting its powerful capabilities for data analysis and collaboration in informed decision-making within organizations.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

1. Syntax: M language basics
2. Variables: Declare and use variables
3. Functions: Create custom functions
4. Error Handling: Handle errors in M language

Demonstration Exercise

Use the built-in sample dataset "Retail Analysis" to demonstrate:

1. Using number functions (ABS, INT, ROUND)
2. Appending files (combine sales data from multiple regions)
3. Merging files (combine customer data from multiple sources)
4. Creating conditional columns (IF, IFERROR, SWITCH)
5. Using Power Query important topics (Group By, Pivot, Unpivot)
6. Writing M language scripts (variables, functions, error handling)

1. Number Functions :
   - DAX : Use 'ABS()', 'INT()', 'ROUND()'.
2. Appending Files :
   - Append : Import and use Append Queries.
3. Merging Files :
   - Merge : Import and use Merge Queries.
4. Conditional Columns :
   - Create : Use 'IF()', 'IFERROR()', 'SWITCH()'.
5. Power Query Topics :
   - Group By : Use Transform > Group By.
   - Pivot / Unpivot : Use Transform > Pivot / Unpivot Columns.
6. M Language Scripts :
   - Advanced Editor : Use 'let' for variables/functions, and 'try ... otherwise' for error handling.

Conclusion :

This experiment showcased key Power Query techniques, including number functions, file operations, and M language scripting, enhancing data analysis and transforming/transformation skills.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Experiment No. : 09

Date of Performance :
Date of Completion :

Title : To study and demonstrate Introduction to Tableau, Data in Tableau, Sets, sorting and filtering in Tableau, parameters.

Theory :

Introduction to Tableau

Tableau is a powerful data visualization tool that enables users to create interactive and shareable dashboards. It allows for the integration of various data sources, facilitating comprehensive analysis and visualization. The core components of this experiment include:

- Data in Tableau: Understanding how to connect and manipulate data within Tableau.
- Sets: Using sets to create custom groups of data based on specific criteria.
- Sorting: Organizing data in meaningful order to enhance clarity.
- Filtering: Excluding unnecessary data points to focus on relevant information.
- Parameters: Utilizing parameters to allow dynamic changes in visualizations based on user input.

Methodology:

i) Data Connection
ii) Creating Sets
iii) Sorting Data
iv) Filtering Data
v) Using Parameters

1. Connecting to Data
   - Open Tableau and select "Sample - Superstore" from the start page.
   - Drag the Orders sheet onto the canvas to load the data.
2. Creating Sets
   - Right-click on a dimension (eg., Product Category) in the Data pane.
   - Select "Create Set", name it (e.g., "Top Products"), and define criteria (eg., top 10 by sales).
3. Sorting and Filtering
   - Sorting : Click on a field in your view (e.g., Sales) and use the sort buttons or right-click to sort ascending or descending.
   - Filtering : Drag a dimension (e.g. Region) to the Filters shelf and select values to include/exclude.
4. Using Parameters
   - Right-click in the Data pane and select "Create Parameter".
   - Define your parameter (e.g., "Sales Target") with appropriate data type and allowable values.
5. Buiding Visualizations
   - Bar Charts : Drag a dimension (eg., Product Category) to Columns and a measure (eg., Sales) to Rows.
   - Line Charts : Drag order Date to Columns and Sales to Rows for time series analysis.
   - Maps : Drag a geographical dimension (eg., State) onto Detail in the Marks card, then drag Sales onto Color for a filled map.

Conclusion :

This experiment effectively demonstrated Tableau's core functionalities, enabling users to connect data, create visualizations, & analyze insights from the Superstore dataset. Also we gained essential skills in data manipulation and visualization techniques.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Formatting

1. Introduction to formatting
2. Formatting options:
   - Colors
   - Fonts
   - Alignment
   - Borders
3. Formatting tools:
   - Format pane
   - Quick format options

Demonstration Exercise

Use the built-in sample dataset "Superstore" to demonstrate:

1. Creating groups and folders
2. Building hierarchies
3. Using Marks Card to customize visualization
4. Creating views and highlighting
5. Formatting dashboards

1. Creating groups and Folders
   - Open Tableau & connect to Sample-Superstore.
   - Right-click on a dimension (eg., Category) > Create > Group to group items.
   - Right-click in the Data pane > Create Folder to organize Fields.
2. Building Hierarchies
   - Select related dimensions (eg., Region, Contry).
   - Right-click the first dimension > Hierarchy > Create Hierarchy and add others.
3. Using Marks Card
   - Open a new worksheet.
   - Drag a measure (eg., Sales) to Rows and a dimension (eg., Category) to Columns.
   - Customize visualization using the Marks

card for colors, sizes, and labels.

4. Creating Views and Highlighting
   - Experiment with different visualizations by dragging fields onto Rows & Columns.
   - Highlight data points by clicking or applying filters.

5. Formatting Dashboards
   - Create a new dashboard and drag sheets onto it.
   - Format elements using options for fonts, colors, and interactive filters.

Conclusion :

This experiment effectively showcases how to utilize Tableau's features, including groups, hierarchies, and the Marks card, to enhance data visualization and analysis. Mastering these tools enables users to create insightful & interactive dashboards from the Superstore dataset.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

Demonstration Exercise

Use the built-in sample dataset to demonstrate:

1. Creating line and area charts
2. Building band charts
3. Creating worksheets with various chart types
4. Writing calculated fields for analysis
5. Using calculated fields in visualizations

1. Line and Area Charts :
   - Line Chart : Connect to Sample - Superstore, drag Order Date to Columns, Sales to Rows, set Marks to Line.
   - Area Chart : Change Marks to Area; add a dimension (eg., Region) to Color.
2. Building Band Charts :
   - On the line/area chart, go to Analytics, drag Reference Band onto the axis, & set the range.
3. Various Chart Types :
   - Bar Chart : Drag dimension (e.g., Category) to Columns, measure (eg., Sales) to Rows; select Bar.
   - Pie Chart : Change Marks to Pie; add measure to Size and dimension to Color.
   - Scatter Plot : Drag measures (eg., Sales and Profit) to Columns and Rows; select Circle.
4. Calculated Fields :
   - Go to 'Analysis > Create Calculated Field', name it (eg., "Profit Ratio"), enter 'SUM ([Profit]) / SUM ([Sales])', and click OK.
5. Using Calculated Fields :
   - Drag the calculated field onto your worksheet for analysis.

Conclusion :

The practical exercise effectively showcased Tableau's capabilities in creating line charts, applying bands, and utilizing calculated fields for enhanced data analysis. Mastery of these features is vital for effective data ~~wit~~ visualization.

CA(15)	**Attendance(15)**	**Performance (10)**	**Oral(10)**	**Out of (50)**
Name & Signature of Subject Teacher (Prof. Mahesh B. Sonje)				

1. Time Series Analysis: Examining trends and patterns
2. Forecasting Methods: ARIMA, Exponential Smoothing, etc.
3. Tableau Forecasting Tool: Creating forecasts
4. Seasonal Decomposition: Identifying trends and seasonality
5. Forecast Accuracy: Evaluating model performance

Demonstration Exercise

Use the built-in sample dataset to demonstrate:

1. Creating waterfall and treemap charts
2. Adjusting aggregation and granularity levels
3. Using database functions for data analysis
4. Creating box and whisker plots
5. Analyzing time series data and forecasting sales

1. Waterfall and Treemap Charts
- Waterfall Chart:
  i) Load "Sample - Superstore".
  ii) Drag 'Sales' to Columns, 'Order Date' to Rows.
  iii) Right-click 'Sales', select "Running Total".
  iv) Change mark type to "Gantt Bar".
- Treemap Chart:
  i) New worksheet.
  ii) Drag 'Category' to Rows, 'Sales' to Size, & 'Category' again to Color.
  iii) Change mark type to "Square".

Adjusting Aggregation and Granularity
- Right-click 'sales', choose aggregation (eg., Sum).
- Drag date field (eg., 'Order Date') to adjust granularity (year/month).

Using Database Functions
- Create calculated fields (right-click in Data pane).
- Use functions like 'SUM([Sales])', 'AVG([Profit])', or conditional statements.

Box and Whisker Plots
- New worksheet.
- Drag 'Category' to Rows, 'Sales' to Columns.

- Select "Box Plot" from "Show Me".

5. Time Series Analysis and Forecasting
   - New worksheet, drag the 'Order Date' to Columns, 'Sales' to Rows.
   - Change mark type to "Line".
   - In Analytics pane, drag "Forecast" into the view.

Conclusion :

This experiment demonstrates effective data visualization in Tableau, enabling participants to master aggregation, granularity, and forecasting for meaningful insights & informed decision-making.

CA(15)	Attendance(15)	Performance (10)	Oral(10)	Out of (50)

Name & Signature of Subject Teacher
(Prof. Mahesh B. Sonje)