

CSBG024T

ADVANCED EXCEL



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CSBG024T
ADVANCED EXCEL

Credit- 4

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STRUCTURE OF PROGRAM

Title of the Program	: BACHELOR OF COMPUTER APPLICATION
Program Type	: Undergraduate
Program Credits	: 120
Program Duration	: 3 years
Eligibility Criteria	: 12th Pass

PROGRAMME OBJECTIVE

- To produce employable IT workforce, that will have sound knowledge of IT and business fundamentals that can be applied to develop and customize solutions for Small and Medium Enterprises (SME)
- To develop skilled manpower in the various areas of information technology like: Data base management, Software Development, Computer-Languages, Software engineering, Web based applications etc.
- To Work professionally with positive attitude as an individual or in multidisciplinary teams and communicate effectively."

PROGRAMME OUTCOME

1. Develop competence in basic technical subjects in computer applications like Programming Languages, Data Structures, Databases, Operating Systems, Software Engineering.
2. Identify, analyze, formulate and develop computer applications.
3. Map real life scenarios to various theoretical optimal solutions.
4. Provide simplest automated solutions to various legacy systems.
5. Use modern computing tools and techniques with confidence.

PROGRAMME SPECIFIC OUTCOME

Upon completion of program in Bachelor of Computer application, students will be able :

1. Able to implement computer skill in the areas related to multimedia and website design, Data base, Hardware and networking.
2. Able to demonstrate basic knowledge in the areas such as, Software Engineering, Data communication and Networking, Data base management, Web Technology and Operating Systems for building IT applications.
3. Students will be able to understand, analyze and develop computer programs in the areas related to algorithm, system software, web design and networking for efficient design of computer-based system.
4. Apply standard software engineering practices and strategies in software project development using open-source programming environment to deliver a quality of product for business success.
5. Student will be able to know various issues, latest trends in technology development and thereby innovate new ideas and solutions to existing problems.

ADVANCED EXCEL

STRUCTURE OF COURSE

Title of the Program	: ADVANCED EXCEL
Program Type	: Generic Elective
Course Code	: CSBG024T
Course Credits	: 4
Semester	: IIIrd Sem

COURSE LEARNING OBJECTIVES:

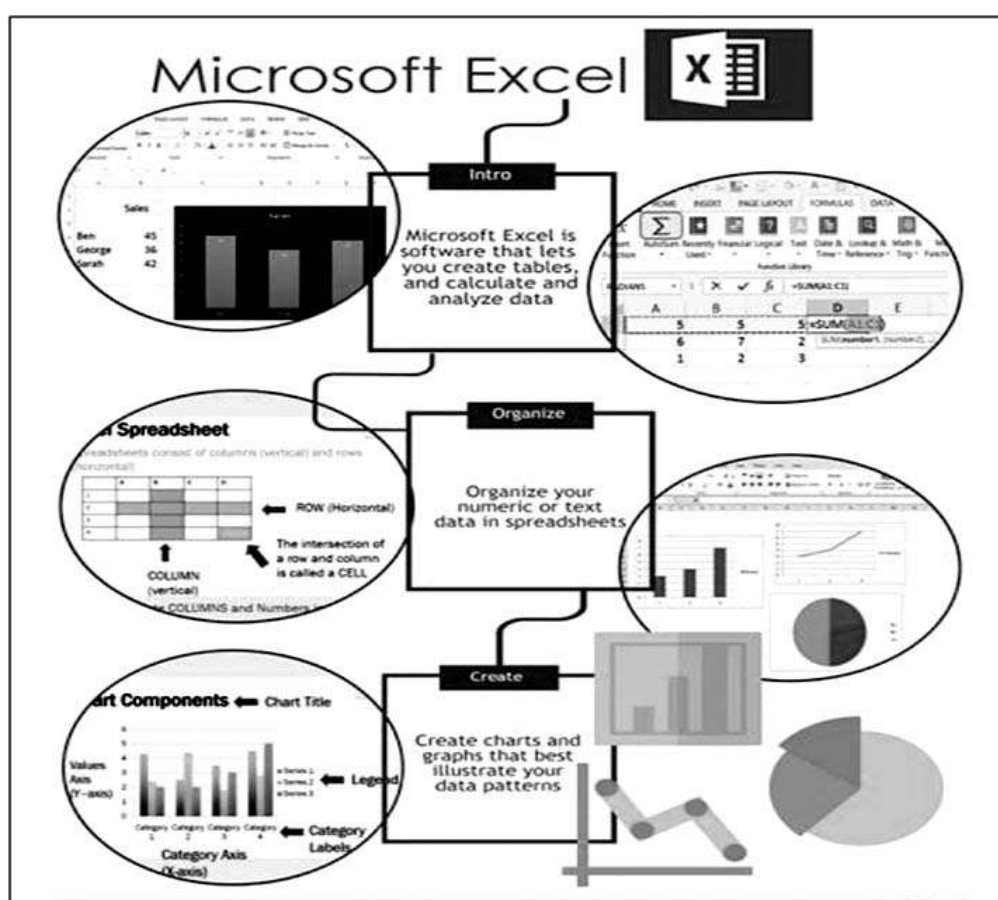
- Understand the basic concept of Microsoft Excel and its real-world applications.
- Identify and explain the main components of the Excel interface (Ribbon, Formula Bar, Workbook, etc.).
- Navigate confidently through spreadsheets, workbooks, and worksheets.
- Create, open, and save Excel workbooks for simple data handling tasks.
- Develop readiness for advanced Excel operations such as formatting, formulas, and data analysis.

COURSE LEARNING OUTCOMES :

1. Define the basic concepts of excel.
2. Demonstrate the columns and rows formatting in excel.
3. Experiment with the formulas and data analysis in excel.
4. Determine the pivot table and chart concepts of excel.
5. Make the use of spreadsheets tools and macros in excel.

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Block I	INTRODUCTION TO EXCEL	01 – 42
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Introduction to Excel lays the foundation for understanding Microsoft Excel as a powerful spreadsheet application used for organizing, analyzing, and managing data. This block begins with an overview of Excel, helping learners become familiar with its basic concept and significance, followed by practical applications that highlight its everyday and professional uses. It then introduces the Excel working environment, enabling students to identify key interface components essential for smooth navigation. File management concepts are covered next, guiding learners on creating, opening, and saving Excel files efficiently. Finally, the block explains workbook and worksheet structure, providing clarity on how data is organized within Excel. Together, these five units aim to build core competence, confidence, and readiness for advanced Excel operations in subsequent blocks.

UNIT – 1

OVERVIEW OF MICROSOFT EXCEL UNIT STRUCTURE

NOTES

UNIT STRUCTURE

- 1.1 Introduction**
- 1.2 Objective**
- 1.3 Overview of Microsoft Excel**
- 1.4 Scope of Excel in Education and Industry**
- 1.5 Summary**
- 1.6 Glossary**
- 1.7 Answer to Check Your Progress**
- 1.8 Suggested Readings – OER**
- 1.9 Reference**
- 1.10 Exercise**

1.1. INTRODUCTION

You are already familiar with basic computer operations such as typing documents, browsing the internet, or storing files. These skills form the foundation for learning Microsoft Excel. Excel builds on this existing knowledge by introducing a structured way to organize, calculate, and analyze data. Understanding spreadsheets is an important step toward developing digital competence required in academics and professional life.

This unit introduces Microsoft Excel and explains its purpose, applications, and working environment. You will learn about Excel software, its key features, and various interface components such as the spreadsheet window, title bar, ribbon, formula bar, status bar, and task pane. The unit also explains file management using the File Tab and Backstage View, along with the concepts of workbooks and worksheets. These topics will help you become comfortable with navigating Excel and managing basic data.

While studying this unit, try to relate the concepts to real-life situations such as maintaining student records, preparing budgets, organizing lists, or analyzing simple data. Practicing alongside learning will make the concepts clearer and more meaningful. This unit serves

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as a foundation for advanced Excel operations covered in later units and will help you develop confidence in using spreadsheets effectively.

1.2. OBJECTIVE

After studying this unit, you will be able to:

- Define the basic concept of Microsoft Excel and its importance.
- Identify the main components of the Excel working environment.
- Explain the uses of Excel in education, industry, and daily life.
- Demonstrate basic file management using the File Tab and Backstage View.
- Understand the structure of workbooks and worksheets for organizing data.

1.3. OVERVIEW OF MICROSOFT EXCEL

Microsoft Excel is a spreadsheet software developed by Microsoft. It helps us organize data, perform calculations, and present information in a clear and meaningful way. Whether you are a student, teacher, business professional, or homemaker, Excel makes daily tasks such as budgeting, record keeping, and data analysis easier and faster.

Excel works in a grid format made up of rows and columns. The intersection of a row and a column forms a cell, where we enter data. Each Excel file is called a **workbook**, and inside a workbook there are multiple **worksheets**. This structure allows us to manage large amounts of information in an organized manner.

Let us now understand Excel and Microsoft in a little more detail.

1.3.1. About Microsoft and Excel Software

Microsoft is a global technology company known for creating popular software such as Windows, Word, PowerPoint, and Excel. Excel is part of the Microsoft Office suite and is widely used for numerical calculations, data storage, chart creation, and reporting.

Excel allows users to:

- Enter and edit data
- Apply formulas for automatic calculations
- Create charts and graphs
- Analyze information efficiently

Because of its flexibility and ease of use, Excel is one of the most preferred spreadsheet tools worldwide.

1.3.1.1. Key Features of Microsoft Excel

Some important features of Excel are:

- Easy data entry and editing
- Automatic calculations using formulas
- Sorting and filtering of data
- Creation of charts and tables
- Storage of large amounts of information
- User-friendly interface

These features make Excel a powerful tool for handling both simple and complex data tasks.

1.3.2. Importance of Excel in Data Management

Excel plays a vital role in data management. It helps us collect, organize, analyze, and present data systematically. With Excel, we can maintain attendance records, marksheets, expense reports, and inventory lists with ease.

Excel also reduces manual work by performing calculations automatically, saving time and minimizing errors. This makes it extremely useful in educational institutions, offices, and businesses.

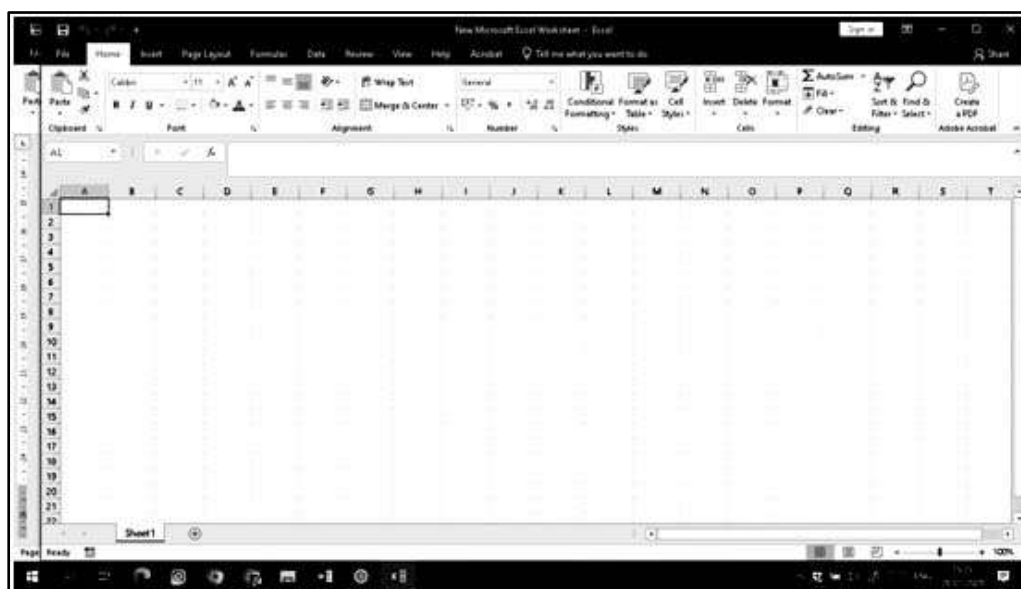


Fig. 1.1 : Microsoft Excel Interface Showing Rows, Columns, and Cells



Activity 1.1 :

Open Microsoft Excel on your computer.

1. Create a new workbook.
2. Enter your name, roll number, and three subject marks in different cells.
3. Save the file with your name.

Materials Needed:

Computer with Excel software.

NOTES

☑ Check Your Progress 1.1.**Notes :** (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is Microsoft Excel?

.....

.....

.....

2. True or False:

Excel is mainly used only for typing documents.

.....

.....

.....

1.4. SCOPE OF EXCEL IN EDUCATION AND INDUSTRY

In education, Excel is used for preparing result sheets, maintaining student databases, and conducting simple data analysis. Teachers use it to organize academic records, while students use it for projects and assignments.

In industry, Excel supports financial planning, sales analysis, payroll management, and reporting. Almost every organization relies on Excel for day-to-day data handling and decision-making.

1.4.1. Role of Excel in Modern Computing

In today's digital world, Excel is considered a basic professional skill. It supports data-driven decisions and improves productivity. Learning Excel prepares students for higher studies and enhances employability by building strong computer and analytical skills.

**Activity 1.2 :**

List any three areas where Excel is used in education and three areas where Excel is used in industry. Write short points for each.

Materials Needed:

Notebook and pen or digital device.

☑ Check Your Progress 1.2.**Notes :** (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Mention two uses of Excel in educational institutions.

.....

.....

.....

2. Write one example of Excel application in industry.

.....



Activity 1.3 :

To create a simple monthly expense sheet in Excel and calculate the total using formulas.



Check Your Progress 1.3.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why is Excel considered an important skill in modern computing.

.....

2. True or False:

Excel cannot be used for data analysis.2.

.....

1.5. SUMMARY

This unit introduced Microsoft Excel as a powerful spreadsheet application used for organizing, calculating, and analyzing data. It explained the role of Microsoft and highlighted key features of Excel that support efficient data management. The unit discussed the importance and wide scope of Excel in education and industry, emphasizing its practical applications such as record keeping, budgeting, reporting, and analysis. Learners were familiarized with the Excel working environment, including components like the ribbon, formula bar, status bar, and task pane, along with file management using the File Tab and Backstage View.

The concepts of workbooks and worksheets were also explained to help understand how data is structured in Excel. Overall, this unit provides a strong foundation for developing basic Excel skills required for advanced operations in later units.

1.6. GLOSSARY

- Microsoft Excel – A spreadsheet software developed by Microsoft used to store, organize, calculate, and analyze data.

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- Spreadsheet – A digital worksheet made of rows and columns where data is entered and processed.
- Workbook – An Excel file that contains one or more worksheets.
- Worksheet – A single sheet within a workbook where data is entered in cells.
- Cell – The intersection of a row and a column in a worksheet where data is typed.
- Ribbon – The toolbar at the top of Excel that contains commands grouped into tabs.
- Formula Bar – The area that displays or allows editing of data and formulas in the selected cell.
- File Tab / Backstage View – The section used to create, open, save, and manage Excel files.
- Status Bar – The bar at the bottom of the Excel window that shows worksheet information.
- Task Pane – A panel that provides additional options and tools depending on the task being performed.

1.7. ANSWER TO CHECK YOUR PROGRESS- POSSIBLE ONE

Check Your Progress 1.1

1. What is Microsoft Excel?

Answer : Microsoft Excel is a spreadsheet software developed by Microsoft that is used to store, organize, calculate, and analyze data using rows, columns, and formulas.

2. True or False:

Excel is mainly used only for typing documents.

Answer : False

Check Your Progress 1.2

1. Mention two uses of Excel in educational institutions.

Answer : Preparing marksheets and result records.

Maintaining student attendance and academic data.

2. Write one example of Excel application in industry.

Answer : Excel is used in industry for preparing monthly sales reports and analyzing business performance.

Check Your Progress 1.3

1. Why is Excel considered an important skill in modern computing?

Answer: Excel is considered an important skill in modern computing because it helps users organize data, perform calculations, analyze information, and create reports efficiently. It

supports data-driven decision making and is widely used in education, business, and professional environments.

2. True or False:

Excel cannot be used for data analysis.

Answer : False

NOTES

1.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3725	

1.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

1.10. EXERCISE

Part 1

A. Multiple choice question

- Which software is used for creating spreadsheets?
(a) MS Word (b) MS PowerPoint (c) MS Excel (d) Paint
- What is an Excel file called?
(a) Document (b) Workbook (c) Slide (d) Folder
- Which component displays formulas of the selected cell?
(a) Ribbon (b) Status Bar (c) Formula Bar (d) Task Pane
- Which option is used to save an Excel file?
(a) Ribbon (b) File Tab (c) Status Bar (d) Worksheet
- A worksheet consists of:

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- | | |
|-----------------------|------------------------|
| (a) Charts and tables | (b) Rows and columns |
| (c) Files and folders | (d) Menus and toolbars |

Answer with Explanation

1. (c) MS Excel

Explanation: Microsoft Excel is specially designed for creating and working with spreadsheets. It allows data entry, calculations, and analysis.

2. (b) Workbook

Explanation: An Excel file is called a workbook. A workbook can contain multiple worksheets.

3. (c) Formula Bar

Explanation : The Formula Bar shows the value or formula of the active cell and allows you to edit it.

4. (b) File Tab

Explanation : The File Tab opens Backstage View, where Save and Save As options are available to store your workbook.

5. (b) Rows and columns

Explanation: A worksheet is made up of rows and columns, and their intersection forms cells where data is entered.

B. Small Answer Type Questions

1. What is a data structure?
2. What are the basic types of data structures?
3. What is structured data?
4. Why is data organization important?

Part 2

C. Long Answer Type Questions (Answer in about 200 words)

1. What is Microsoft Excel? Explain its importance.
2. Describe the uses of Excel in education and industry.
3. Explain the main components of the Excel working environment.

Part 3

D. Long Answer Type Questions (Answer in about 300 words)

1. Discuss the scope of Microsoft Excel and its applications in real life.
2. Explain Excel interface components such as Ribbon, Formula Bar, Status Bar, and Task Pane.

OVERVIEW OF MICROSOFT EXCEL UNIT STRUCTURE

3. Describe file management in Excel using File Tab and Backstage View.

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UNIT – 2

ANALYSIS OF ALGORITHMS

NOTES

UNIT STRUCTURE

- 2.1 Introduction**
- 2.2 Objective**
- 2.3 Applications of Excel**
- 2.4 Advantages of Using Excel**
- 2.5 Summary**
- 2.6 Glossary**
- 2.7 Answer to Check Your Progress**
- 2.8 Suggested Readings – OER**
- 2.9 Reference**
- 2.10 Exercise**

2.1. INTRODUCTION

In the previous unit, you learned about Microsoft Excel, its working environment, and the structure of workbooks and worksheets. You also became familiar with basic Excel components such as the ribbon, formula bar, and file management options. This knowledge forms the foundation for working with data inside Excel sheets. Building on this understanding, this unit introduces how information is arranged and managed using rows, columns, and cells.

This unit focuses on practical operations related to columns and rows, including selecting, resizing, hiding, unhiding, inserting, and deleting them. You will also learn about cells, cell addresses, and components of a cell such as format, value, and formula. In addition, the unit explains working with ranges, entering data into ranges, using AutoFill, and applying paste and paste special options. These skills are essential for organizing data efficiently and performing everyday spreadsheet tasks.

While studying this unit, try to practice each operation in Excel alongside the content. Use sample data such as student marks, attendance lists, or household expenses to understand how rows, columns, and ranges work in real-life situations. Regular hands-on practice will help you gain confidence and prepare you for advanced Excel features covered in the upcoming units.

2.2 OBJECTIVE

After studying this unit, you will be able to:

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- Identify rows, columns, cells, and cell addresses in Excel.
- Select, resize, insert, delete, hide, and unhide rows and columns.
- Explain the components of a cell including format, value, and formula.
- Use ranges to enter and manage data efficiently.
- Apply AutoFill, paste, and paste special for faster data handling.

2.3. APPLICATIONS OF EXCEL

Microsoft Excel is widely used to organize, manage, and analyze data. Once you understand rows, columns, cells, and ranges, you can perform many practical tasks easily. Excel helps us work faster, reduce manual errors, and present information clearly.

Let us look at how Excel is used in different areas of life.

2.3.1. Academic Uses of Excel

In educational institutions, Excel is commonly used by teachers, students, and administrators. Teachers use Excel to prepare attendance sheets, marks list, and result summaries. Students use Excel for project work, data entry, and basic calculations.

For example, you can enter student marks in rows, subjects in columns, and use formulas to calculate totals and averages. AutoFill helps copy formulas quickly, and ranges make it easy to format or analyze multiple cells at once.

Excel also supports academic research by organizing survey data and creating simple charts for presentations.

2.3.1.1. Business and Professional Uses of Excel

In offices and industries, Excel is used for daily data management tasks such as sales tracking, payroll preparation, inventory control, and financial reporting. Professionals use Excel to enter data into cells, arrange information in rows and columns, and apply formulas to generate quick results.

Excel features like paste special, AutoFit, and ranges help save time while working with large datasets. Managers use Excel reports and charts to make informed business decisions.

Because of these applications, Excel is considered a basic professional skill.

2.3.2. Personal Uses of Excel

Excel is also useful in personal life. You can use it to manage monthly expenses, create household budgets, plan events, or maintain contact lists. For example, you may create a simple expense sheet by entering dates, items, and amounts in columns and calculating totals automatically.

Using Excel regularly helps improve digital confidence and organization skills.

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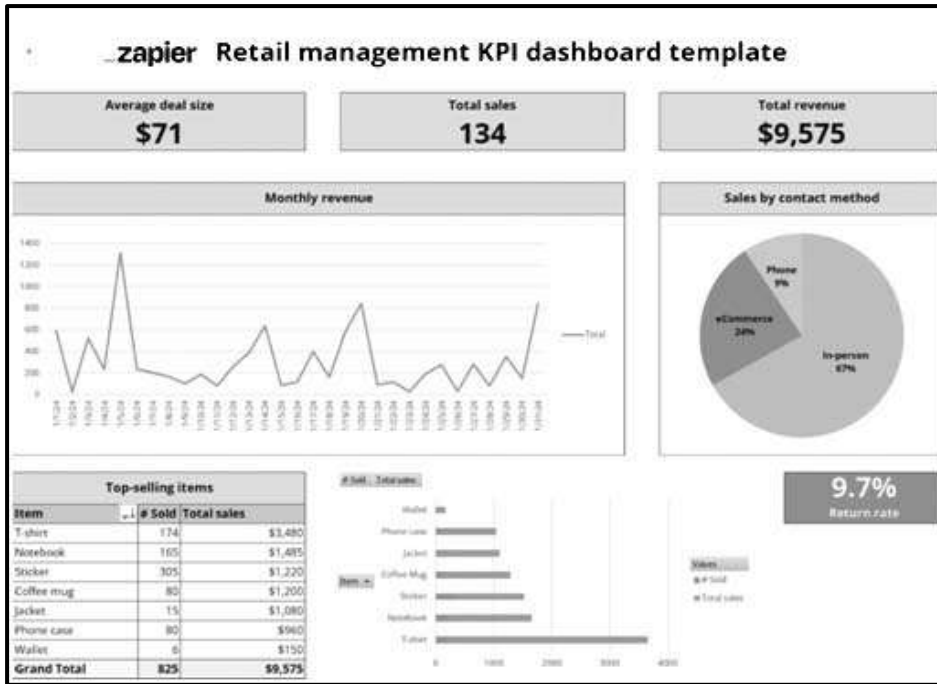


Fig. 2.1: Uses of Microsoft Excel

**Activity 2.1.**

Create a simple Excel sheet with the following columns: Date, Item, Amount.

Enter at least five expense entries and calculate the total using a formula.

Materials Needed:

Computer with Excel.

**Check Your Progress 2.1**

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Mention two academic uses of Excel.

.....

.....

.....

2. Write one professional application of Excel.

.....

.....

.....

2.4. ADVANTAGES OF USING EXCEL

Microsoft Excel offers many advantages that make data handling simple and efficient. One of the biggest benefits of Excel is that it saves

ADVANCED EXCEL

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time by performing calculations automatically. Once formulas are applied, results update instantly when values change.

Excel also helps organize large amounts of information in rows and columns, making data easy to read and manage. Features such as AutoFill, formatting, and ranges allow users to complete repetitive tasks quickly. Excel reduces manual errors and improves accuracy in calculations.

Another advantage is flexibility. You can resize columns, hide rows, copy data using paste special, and arrange information as needed. Excel also supports charts and tables, which help present data visually. These advantages make Excel useful for students, teachers, professionals, and households.

2.4.1. Real-Life Examples of Excel Applications

Excel is widely used in everyday life. Teachers prepare marksheets and attendance records using rows and columns. Students use Excel to organize project data and perform simple calculations.

In offices, Excel helps maintain employee records, track sales, and prepare monthly reports. Shop owners use Excel to manage stock and daily income. At home, people use Excel to plan budgets, track expenses, and organize personal information.

For example, you can create a monthly expense sheet by entering dates, items, and amounts in different columns and calculating totals using formulas. Such real-life applications show how Excel makes work easier, faster, and more organized.



Activity 2.2.

Prepare a simple Excel sheet showing your weekly expenses and calculate the total using a formula.



Check Your Progress 2.2

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

- Write two advantages of using Excel.

.....

- Mention one real-life example of Excel usage.

.....

2.5. SUMMARY

Rows and Columns : Rows run horizontally and columns run vertically in a worksheet. Together they organize data in tabular form.

Cell : A cell is the intersection of a row and a column where data is entered. Each cell has an address (such as A1) and contains format, value, or formula.

Column Width and Row Height : These control the size of columns and rows and can be adjusted manually or automatically using AutoFit.

Insert, Delete, Hide, and Unhide : Rows and columns can be inserted, deleted, hidden, or unhidden to manage worksheet layout efficiently.

Ranges : A range is a group of selected cells used for entering data, formatting, or applying formulas together.

AutoFill : AutoFill helps copy values or formulas quickly across cells, saving time.

Paste and Paste Special : Paste transfers copied data, while Paste Special allows selective pasting such as values or formats only.

Applications of Excel : Excel is used in academics, professional environments, and personal life for organizing data, performing calculations, and preparing reports.

Advantages of Excel : Excel improves accuracy, saves time, supports large datasets, and provides flexibility in data handling.

Overall, this unit develops essential skills for managing rows, columns, cells, supports large datasets, and offers flexibility in managing information.

2.6. GLOSSARY

- **Row** – A horizontal line of cells in a worksheet identified by numbers.
- **Column** – A vertical line of cells in a worksheet identified by letters.
- **Cell** – The intersection of a row and a column where data is entered.
- **Cell Address** – The unique name of a cell formed by column letter and row number (e.g., A1).
- **Range** – A group of selected cells used together for data entry, formatting, or calculations.
- **AutoFill** – A feature that automatically copies values or formulas into adjacent cells.
- **Column Width** – The horizontal size of a column.
- **Row Height** – The vertical size of a row.

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- **Paste** – Transfers copied data into another location.
- **Paste Special** – Allows selective pasting such as values, formats, or formulas only.
- **Hide/Unhide** – A feature used to temporarily remove or display rows and columns.
- **Insert/Delete** – Commands used to add or remove rows and columns.

2.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 2.1

1. Mention two academic uses of Excel.
 - Preparing marksheets and result records.
 - Maintaining student attendance data.
2. Write one professional application of Excel.
Excel is used to prepare sales reports and manage business records.

Check Your Progress 2.2.

1. Write two advantages of using Excel.
 - Excel saves time by performing automatic calculations.
 - It helps organize large amounts of data accurately.
2. Mention one real-life example of Excel usage.
Excel can be used to prepare a monthly household expense sheet.

2.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3726	

2.9. REFERENCE

- AISECT Learning Services. (2024). *Open educational resources on spreadsheet fundamentals*. AISECT Publications.
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- Alexander, M. (2021). *Excel basics to advanced analytics*. Packt Publishing.

2.10. EXERCISE

Part 1

A. Multiple Choice Questions

- Which option is used to adjust column width automatically?
 - Paste
 - AutoFill
 - AutoFit
 - Format Painter
- What is the intersection of a row and a column called?
 - Range
 - Cell
 - Sheet
 - Workbook
- Which feature copies data or formulas automatically?
 - Paste Special
 - AutoFill
 - Hide
 - Insert
- Which command is used to temporarily remove a column from view?
 - Delete
 - Hide
 - Paste
 - Format
- A group of selected cells is called:
 - Worksheet
 - Workbook
 - Range
 - Ribbon

Answers with Explanations

1. (c) AutoFit

Explanation : AutoFit automatically adjusts the column width to fit the longest content in the cells.

2. (b) Cell

Explanation : A cell is formed where a row and a column meet. It is the basic unit where data is entered.

3. (b) AutoFill

Explanation : AutoFill copies values or formulas into adjacent cells quickly.

4. (b) Hide

Explanation : Hide removes a column from view without deleting it. The data remains stored.

NOTES

5. (c) Range

Explanation : A range refers to multiple selected cells used together for formatting or calculations.

B. Small Answer Type Questions

1. What is Microsoft Excel?
2. What are the common uses of Excel?
3. How is Excel used for data analysis?
4. How is Excel useful in business?

Part 2**C. Long Answer Type Questions (Answer in about 200 words)**

1. Explain rows, columns, and cells in Excel.
2. Describe the steps to insert and delete rows and columns.
3. What is a range? Explain its importance in Excel.
4. Explain AutoFill and Paste Special with examples.
5. Write advantages of using Excel for data management.

Part 3**D. Long Answer Type Questions (Answer in about 300 words)**

1. Explain operations on rows and columns including resizing, hiding, and unhiding.
2. Discuss components of a cell and their role in data processing.
3. Explain working with ranges and entering data efficiently in Excel.
4. Describe real-life applications of Excel in academics and professional work.
5. Discuss how Excel improves accuracy and productivity in data handling.

UNIT – 3

EXCEL WORKING ENVIRONMENT UNIT STRUCTURE

NOTES

UNIT STRUCTURE

- 3.1 Introduction**
- 3.2 Objective**
- 3.3 Spreadsheet Window Pane**
- 3.4 Understanding Excel Interface Components**
- 3.5 Summary**
- 3.6 Glossary**
- 3.7 Answer to Check Your Progress**
- 3.8 Suggested Readings – OER**
- 3.9 Reference**
- 3.10 Exercise**

3.1. INTRODUCTION

In the previous unit, you learned how to work with rows, columns, cells, and ranges in Microsoft Excel. You also practiced inserting, deleting, hiding, and formatting data. These skills help you organize information properly. Building on this knowledge, this unit introduces the Excel working environment, which helps you understand where and how these operations take place on the screen.

This unit explains the spreadsheet window pane and important interface components such as the Title Bar, Menu Bar, Toolbars, Ribbon, Formula Bar, Status Bar, Task Pane, and Workbook Window. You will also learn how to navigate the Excel workspace and understand the purpose of each part of the Excel screen. These topics will help you move confidently within Excel and locate tools quickly while working.

While studying this unit, open Excel and try to identify each component discussed. Practice moving around the worksheet, using the ribbon tabs, and observing how information appears in the formula bar and status bar. Relating these features to real tasks such as entering data or editing sheets will help you understand the Excel environment better and prepare you for advanced operations in later units.

3.2. OBJECTIVE

After studying this unit, you will be able to:

- Identify different parts of the Excel working environment.
- Explain the functions of Title Bar, Ribbon, Formula Bar, and Status Bar.
- Use the Task Pane and Workbook Window effectively.
- Navigate through the Excel workspace confidently.
- Understand how Excel interface components support data entry and management.

3.3. SPREADSHEET WINDOWPANE

When you open Microsoft Excel, the first screen you see is called the spreadsheet window pane. This is the main working area where all Excel activities take place. It contains rows, columns, cells, and various tools that help you enter, edit, and manage data.

The spreadsheet window pane includes important parts such as the Title Bar, Ribbon, Formula Bar, Status Bar, Task Pane, and Workbook Window. Each part has a specific role. Together, they help you perform tasks like typing data, applying formulas, formatting cells, and saving files.

Understanding the spreadsheet window pane makes your work easier because you know exactly where to find tools and how to move around the worksheet efficiently.

3.3.1. Title Bar, Menu Bar, Toolbars and Ribbon

The **Title Bar** is located at the top of the Excel window. It displays the name of the current workbook and the Excel application. This helps you know which file you are working on.

The **Menu Bar** and **Toolbars** provide access to various commands used in Excel. In modern versions of Excel, these commands are organized within the **Ribbon**. The Ribbon contains tabs such as Home, Insert, Page Layout, Formulas, Data, Review, and View. Each tab includes groups of related tools used for formatting, editing, inserting charts, and managing data.

The Ribbon makes it easy to find commands because tools are arranged logically. For example, the Home tab contains options for font, alignment, and number formatting, while the Insert tab allows you to add tables and charts.

3.3.1.1. Formula Bar and Status Bar

The **Formula Bar** is located below the Ribbon. It displays the content of the active cell and allows you to enter or edit data and formulas. Whenever you click on a cell, its value or formula appears in the Formula Bar.

The **Status Bar** appears at the bottom of the Excel window. It shows useful information such as Ready mode, selected cell count, and quick calculations like sum or average. It also provides shortcuts for changing worksheet views and zoom levels.

Both the Formula Bar and Status Bar help you work more accurately and efficiently in Excel.

3.3.2. Task Pane and Workbook Window

The **Task Pane** is a panel that appears on the side of the Excel window and provides additional options depending on the task being performed. For example, when formatting charts or searching data, the Task Pane offers quick access to related tools. It helps you complete tasks without moving away from your worksheet.

The **Workbook Window** is the main area where worksheets are displayed. Each workbook may contain multiple worksheets, and you can switch between them using sheet tabs at the bottom. The Workbook Window allows you to view, edit, and manage data across different sheets within the same file.

Understanding the Task Pane and Workbook Window helps you work smoothly with multiple worksheets and complete tasks more efficiently.

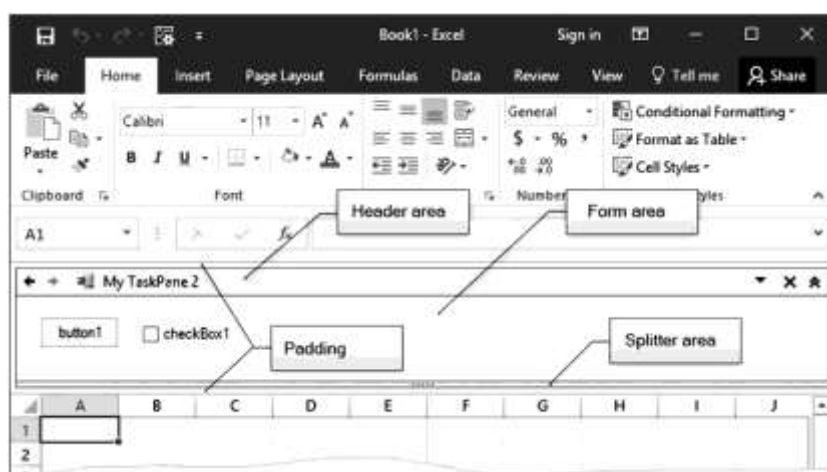


Fig. 3.1 : Microsoft Excel Task Pane



Activity 3.1.

Open Microsoft Excel on your computer.

1. Identify the Title Bar, Ribbon, Formula Bar, Status Bar, and Workbook Window.
2. Write the name of your workbook in your notebook.
3. Type any number in a cell and observe how it appears in the Formula Bar.
4. Select five cells with numbers and note what appears on the Status Bar.

Objective: To help learners recognize major Excel interface components through hands-on practice.

NOTES

☑ Check Your Progress 3.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What information is shown on the Title Bar?

.....

.....

.....

2. Which component contains tabs like Home and Insert.

.....

.....

.....

3. Where can you view or edit the contents of the active cell?

.....

.....

.....

3.4. UNDERSTANDING EXCEL INTERFACE COMPONENTS

The Excel interface consists of several components that work together to support data entry and management. These include the Title Bar, Ribbon, Formula Bar, Status Bar, Task Pane, and Workbook Window. Each component has a specific function, such as displaying file information, providing tools, showing formulas, or indicating worksheet status.

When you understand these components, you can locate commands quickly and perform operations like formatting cells, inserting data, and applying formulas with ease. Knowing where tools are placed improves speed and accuracy while working in Excel.

3.4.1. Navigating the Excel Workspace

Navigating the Excel workspace means moving around worksheets and using different tools to perform tasks efficiently. You can move between cells using arrow keys or the mouse. The scroll bars help you move up, down, left, and right within a worksheet.

You can switch between worksheets using the sheet tabs at the bottom of the workbook. The Ribbon allows quick access to commands, while the Formula Bar helps in entering and editing data. Zoom controls on the Status Bar let you adjust the worksheet view for better visibility.

Learning to navigate the Excel workspace helps you work faster and avoid confusion while handling large datasets.



Activity 3.2.

Create a new Excel workbook.

1. Enter your name in cell A1 and today's date in cell B1.
2. Use the Ribbon to change the font style of your name.
3. Switch between two worksheets using sheet tabs.
4. Adjust the zoom level using the Status Bar.

Objective : To help learners practice navigating Excel and using interface components confidently.



Check Your Progress 3.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. List any two Excel interface components.

.....

2. Which part of Excel provides commands for formatting and editing?

.....



Check Your Progress 3.3.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why is Excel considered an important skill in modern computing?

.....

2. **True or False :** Excel cannot be used for data analysis.

.....

3.5. SUMMARY

This unit explained the Excel working environment and its key interface components. Learners were introduced to the spreadsheet

NOTES

window pane, Title Bar, Ribbon, Formula Bar, Status Bar, Task Pane, and Workbook Window. The unit also covered navigation within the Excel workspace, helping users move between cells and worksheets easily. Understanding these components enables efficient data entry, editing, and management, and prepares learners for advanced Excel features in upcoming units.

3.6. GLOSSARY

- **Title Bar** – Displays the name of the Excel workbook currently in use.
- **Ribbon** – A toolbar containing commands arranged under different tabs.
- **Formula Bar** – Shows and allows editing of data or formulas in the selected cell.
- **Status Bar** – Displays worksheet status and quick calculations.
- **Task Pane** – A side panel providing additional options related to tasks.
- **Workbook Window** – The main working area displaying worksheets.
- **Sheet Tab** – Used to switch between worksheets in a workbook.
- **Zoom Control** – Adjusts the size of worksheet display on the screen.

3.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 3.1.

1. **Answer :** The Title Bar shows the name of the current workbook and the Excel application.
2. **Answer :** The Ribbon contains tabs such as Home and Insert.
3. **Answer :** The contents of the active cell can be viewed or edited in the Formula Bar.

Check Your Progress 3.2.

1. **Two uses of Excel in educational institutions :**
 1. Preparing marksheets and result records.
 2. Maintaining student attendance and academic data.
2. **Answer :** Excel is used in industry for preparing monthly sales reports and analyzing business performance.

Check Your Progress 3.3.

1. **Answer :** Excel is considered an important skill in modern computing because it helps users organize data, perform calculations, analyze information, and create reports efficiently. It supports data-driven decision making and is widely used in education, business, and professional environments.

2. True or False:

Excel cannot be used for data analysis.

Answer : False

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3.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3727	

3.9. REFERENCE

- AISECT Learning Services. (2024). Open educational resources on Microsoft Excel interface. AISECT Publications.
- Ministry of Education, Government of India. (2023). Digital skills: Excel fundamentals. DIKSHA.
- SWAYAM. (2022). Excel working environment and navigation. Government of India.
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- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

3.10. EXERCISE**Part 1****A. Multiple Choice Questions**

- Which bar displays the workbook name?
(a) Status Bar (b) Title Bar (c) Formula Bar (d) Ribbon
- Where are Excel commands grouped?
(a) Task Pane (b) Workbook Window
(c) Ribbon (d) Status Bar
- Which area shows the contents of the active cell?
(a) Title Bar (b) Formula Bar
(c) Sheet Tab (d) Zoom Bar
- Which component appears at the bottom of the Excel window?
(a) Ribbon (b) Task Pane (c) Status Bar (d) Menu Bar
- Sheet tabs are used to:
(a) Format cells (b) Switch worksheets
(c) Insert formulas (d) Save files

NOTES

Answers with Explanations**1. (b) Title Bar**

Explanation : The Title Bar shows the name of the current Excel workbook along with the application name.

2. (c) Ribbon

Explanation : The Ribbon organizes Excel commands into tabs such as Home, Insert, and Data for easy access.

3. (b) Formula Bar

Explanation : The Formula Bar displays and allows editing of the value or formula of the selected cell.

4. (c) Status Bar

Explanation : The Status Bar is located at the bottom and shows worksheet information and quick calculations.

5. (b) Switch worksheets

Explanation : Sheet tabs allow users to move between different worksheets within the same workbook.

B. Small Answer Type Questions

1. What is the Excel Ribbon?
2. What is the Formula Bar?
3. What is the Name Box?
4. What is the Quick Access Toolbar?

Part 2**C. Long Answer Type Questions (Answer in about 200 words)**

1. Explain the Excel working environment.
2. Describe the functions of Ribbon and Formula Bar.
3. What is the role of Task Pane and Workbook Window?
4. Explain how to navigate the Excel workspace.
5. Discuss the importance of Excel interface components.

Part 3**D. Long Answer Type Questions (Answer in about 300 words)**

1. Describe all major components of Excel interface and their functions.
2. Explain the importance of navigating worksheets effectively.
3. Discuss how Excel workspace supports data management.
4. Explain real-life applications of Excel interface knowledge.
5. Discuss how understanding Excel environment improves productivity.

UNIT – 4

FILE MANAGEMENT IN EXCEL

UNIT STRUCTURE

UNIT STRUCTURE

- 4.1 Introduction**
- 4.2 Objective**
- 4.3 File Tab and Backstage View**
- 4.4 Organizing and Storing Excel Documents**
- 4.5 Summary**
- 4.6 Glossary**
- 4.7 Answer to Check Your Progress**
- 4.8 Suggested Readings – OER**
- 4.9 Reference**
- 4.10 Exercise**

4.1. INTRODUCTION

In the previous units, you learned how to work with Excel sheets, interface components, rows, columns, and cells. Once data is created, it becomes important to save and manage files properly. File management helps protect your work and makes it easy to find documents later.

This unit introduces the File Tab and Backstage View, along with basic operations such as creating, saving, opening, and closing Excel workbooks. You will also learn how to organize files and follow good storage practices.

While studying this unit, try to practice saving files in folders, opening existing workbooks, and renaming documents. Relating these steps to real tasks such as saving assignments or reports will help you understand file management clearly.

4.2. OBJECTIVE

After studying this unit, you will be able to:

- Use the File Tab and Backstage View.
- Create and save Excel files.
- Open and close workbooks properly.
- Manage Excel files efficiently.
- Organize and store Excel documents safely.

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4.3. FILE TAB AND BACKSTAGE VIEW

The **File Tab** is located on the Ribbon and opens the **Backstage View**. This area is used for file-related tasks such as New, Open, Save, Save As, Print, and Close.

Backstage View does not change worksheet content. Instead, it helps manage files. From here, you can create new workbooks, open existing files, and save your work in different locations.

4.3.1. Creating and Saving Excel Files

To create a new Excel file, click **File** → **New** → **Blank Workbook**.

To save a file:

1. Click **File** → **Save As**
2. Choose a folder
3. Enter a file name
4. Click **Save**

Saving regularly prevents data loss.

4.3.1.1. Opening and Closing Workbooks

Some important features of Excel are:

- Easy data entry and editing
- Automatic calculations using formulas
- Sorting and filtering of data
- Creation of charts and tables
- Storage of large amounts of information
- User-friendly interface

These features make Excel a powerful tool for handling both simple and complex data tasks.

4.3.2. Managing Excel Files

Excel allows you to rename, delete, move, or copy files using File Explorer. You can also save files in different formats such as .xlsx or .pdf. Proper file management helps avoid confusion and data loss.

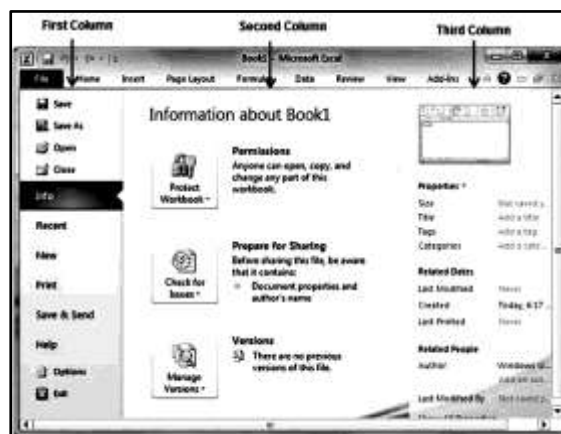


Fig. 4.1: Information about a Worksheet.



Activity 4.1.

1. Open Microsoft Excel.
2. Click on the File Tab.
3. Create a new workbook.
4. Save it with your name.
5. Close the file and open it again.

Objective : To practice creating, saving, closing, and reopening Excel files.

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Check Your Progress 4.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What opens when you click the File Tab?

.....

2. Name any two options available in Backstage View.

.....

4.4. ORGANIZING AND STORING EXCEL DOCUMENTS

Excel files should be stored in clearly named folders such as “Assignments,” “Reports,” or “Projects.” This makes documents easy to locate.

You can organize files by:

- Creating folders
- Using meaningful file names
- Storing related files together
- Making backup copies

4.4.1. Best Practices for File Management

Good file management includes:

- Saving files regularly
- Using clear file names
- Keeping folders organized
- Creating backups
- Avoiding duplicate files

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These habits protect data and improve productivity.

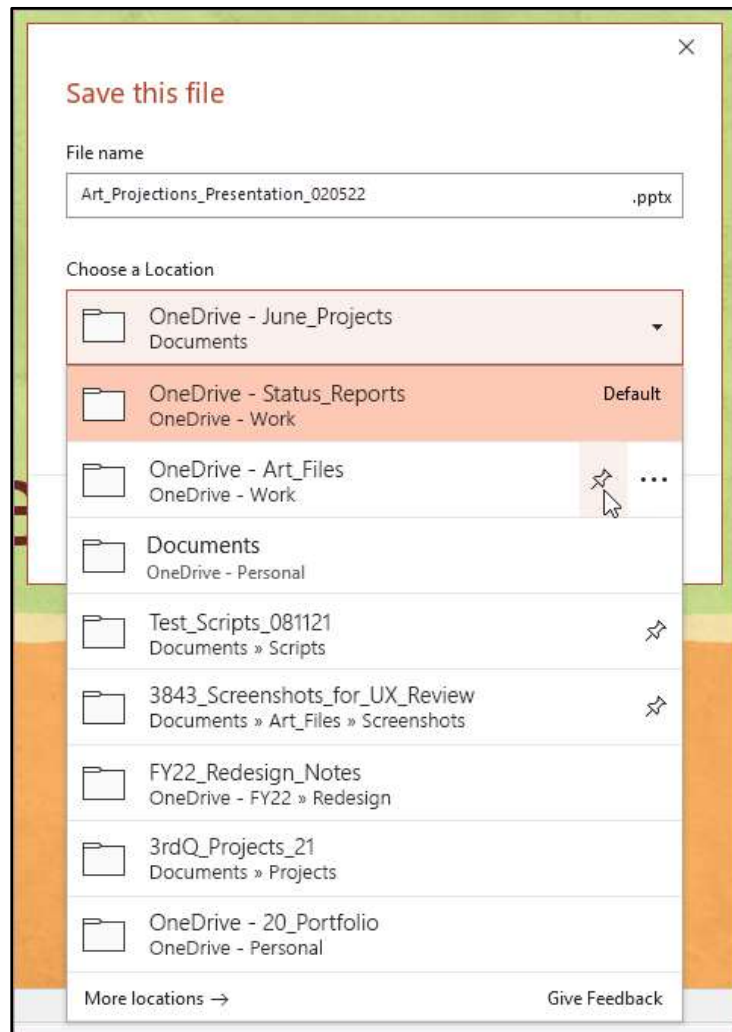


Fig. 4.2 : Saving a Workbook



Activity 4.2.

1. Create a folder named “Excel Practice”.
2. Save two Excel files inside this folder.
3. Rename one file using a meaningful name.

Objective : To learn basic file organization and naming.



Check Your Progress 4.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why should Excel files be stored in folders?

.....

2. Write one example of a good Excel file name.

.....

4.5. SUMMARY

This unit explained how to manage Excel files using the File Tab and Backstage View. Learners studied how to create, save, open, and close workbooks. The unit also covered organizing and storing Excel documents along with best practices such as regular saving, clear file naming, and backups. Proper file management helps protect data, improves organization, and supports efficient Excel usage.

4.6. GLOSSARY

- **File Tab** – Opens file management options.
- **Backstage View** – Area for saving, opening, and printing files.
- **Workbook** – Excel file containing worksheets.
- **Save As** – Saves a file with a new name or location.
- **Backup** – Extra copy of a file for safety.

4.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 4.1.

1. **Ans.** Backstage View opens when you click the File Tab.
2. **Ans.** Save and Open.

Check Your Progress 4.2.

1. **Ans.** Excel files should be stored in folders to keep them organized and make them easy to find.
2. **Ans.** Monthly_Expenses.xlsx

4.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3728	

4.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
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- National Programme on Technology Enhanced Learning (NPTEL). (2022). Spreadsheet applications and data handling. IIT Consortium.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

4.10. EXERCISE

Part 1**A. Multiple choice question**

1. Which option saves a file with a new name?
 - (a) Open
 - (b) Save As
 - (c) Close
 - (d) Print
2. File-related commands are found under:
 - (a) Ribbon
 - (b) File Tab
 - (c) Status Bar
 - (d) Task Pane
3. Which option is used to open an existing Excel file?
 - (a) New
 - (b) Save
 - (c) Open
 - (d) Print
4. Which of the following is a good file-naming practice?
 - (a) File1
 - (b) NewExcel
 - (c) Marks_January_2026
 - (d) abc
5. Why is creating a backup important?
 - (a) To change file format
 - (b) To delete files faster

- (c) To protect data from loss
- (d) To increase file size

NOTES

Answers with Explanations:**1. (b) Save As**

Explanation : Save As allows you to save the file with a different name or in a new location, while keeping the original file unchanged.

2. (b) File Tab

Explanation : Options such as New, Open, Save, Save As, and Print are available under the File Tab in Backstage View.

3. (c) Open

Explanation : The Open option is used to access previously saved Excel files.

4. (c) Marks_January_2026

Explanation : A good file name clearly describes the content and date, making the file easy to identify later.

5. (c) To protect data from loss

Explanation : A backup keeps an extra copy of files, which helps recover data in case of accidental deletion or system failure.

B. Small answer type question

1. How do you create a new Excel file?
2. How do you save an Excel workbook?
3. What is the purpose of Save As?
4. How can an Excel file be opened?

Part 2**C. Long answer type question (answer in 200 words)**

1. Explain Microsoft Excel and discuss its importance in education, industry, and daily life.
2. Describe rows, columns, cells, and ranges in Excel. Explain how AutoFill and Paste Special help in efficient data handling.
3. Explain the Excel working environment. Describe the functions of Title Bar, Ribbon, Formula Bar, Status Bar, Task Pane, and Workbook Window.
4. Explain the File Tab and Backstage View. Describe the steps to create and save Excel files.
5. Discuss the advantages of using Excel and explain its real-life applications in academic, professional, and personal contexts.

NOTES**Part 3****D. Long answer type question (answer in 300 words)**

1. Discuss Microsoft Excel in detail and explain its scope in education, industry, and everyday life. Also explain how Excel supports data organization and analysis.
2. Explain operations on rows, columns, cells, and ranges in Excel. Describe AutoFill, Paste Special, and their role in improving productivity.
3. Describe the Excel working environment in detail. Explain the functions of Title Bar, Ribbon, Formula Bar, Status Bar, Task Pane, and Workbook Window. Also discuss how navigating the Excel workspace helps in efficient data management.
4. Explain File Tab and Backstage View. Discuss steps to create, save, open, and organize Excel files. Also explain best practices for file management.
5. Discuss advantages of Excel and explain real-life applications of Excel in academics, business, and personal work.

UNIT – 5

WORKBOOK AND WORKSHEET STRUCTURE

UNIT STRUCTURE

- 5.1 Introduction**
- 5.2 Objective**
- 5.3 Concept of Workbook and Worksheets**
- 5.4 Managing Multiple Worksheets**
- 5.5 Summary**
- 5.6 Glossary**
- 5.7 Answer to Check Your Progress**
- 5.8 Suggested Readings – OER**
- 5.9 Reference**
- 5.10 Exercise**

5.1. INTRODUCTION

In earlier units, you learned how to work with Excel interface components, rows, columns, cells, and file management. Once data is entered and saved, it becomes important to understand how Excel organizes information using workbooks and worksheets.

This unit introduces the concept of workbooks and worksheets and explains how to create, rename, delete, and organize sheets. You will also learn how to manage multiple worksheets within a single workbook.

While studying this unit, practice switching between sheets and organizing simple data such as marks or expenses. This will help you understand how Excel structures information in real-life situations.

5.2. OBJECTIVE

After studying this unit, you will be able to:

- Explain the concept of workbook and worksheet.
- Create and navigate between worksheets.
- Add, delete, and rename sheets.
- Organize data across multiple worksheets.
- Manage workbook structure efficiently.

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5.3. CONCEPT OF WORKBOOK AND WORKSHEETS

An **Excel workbook** is a file that contains one or more worksheets. Each worksheet is a separate page where data is entered in rows and columns.

Think of a workbook as a notebook and worksheets as individual pages inside it. For example, one workbook may contain separate sheets for Attendance, Marks, and Expenses.

This structure allows users to store related information together in one file.

5.3.1. Creating and Navigating Worksheets

When you open Excel, a workbook opens with at least one worksheet. You can move between worksheets using **sheet tabs** at the bottom of the window.

To add a new worksheet, click the **plus (+)** sign near the sheet tabs. To move between sheets, simply click on the required tab.

This helps manage different types of data in one workbook.

5.3.1.1. Adding, Deleting, and Renaming Sheets

- **Add Sheet** : Click the (+) icon.
- **Rename Sheet** : Double-click the sheet name and type a new name.
- **Delete Sheet** : Right-click the sheet tab and select Delete.

Using meaningful names such as Marks or Expenses makes worksheets easy to identify.

5.3.2. Understanding Sheet Organization

Good organization improves clarity. Each worksheet should contain related data only. For example:

- Sheet 1 – Student Details
- Sheet 2 – Marks
- Sheet 3 – Attendance

This method avoids confusion and saves time.



Fig. 5.1: Microsoft Excel Interface of the Worksheet



Activity 5.1.

Open Microsoft Excel on your computer.

1. Create a new workbook.
2. Rename Sheet1 as **Student_Data**.
3. Add two more worksheets and rename them **Marks** and **Attendance**.
4. Enter your name in cell A1 of each worksheet.
5. Save the workbook with the name **My_Practice_File.xlsx**.

Objective:

To help learners understand the relationship between a workbook and worksheets and practice basic sheet operations.

NOTES



Check Your Progress 5.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is a workbook in Excel?

.....

2. What is a worksheet?

.....

3. How do you add a new worksheet?

.....

5.4. MANAGING MULTIPLE WORKSHEETS

Excel allows you to work with many worksheets at once. You can copy data between sheets, format multiple sheets together, and move sheets within a workbook.

Managing worksheets properly helps handle large datasets and projects efficiently.

5.4.1. Practical Handling of Workbook Structure

Good workbook handling includes:

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- Using clear sheet names
- Keeping related data together
- Avoiding unnecessary sheets
- Saving work regularly

These practices improve productivity and data safety.



Activity 5.2.

Using the same workbook:

1. Enter sample marks in the **Marks** sheet.
2. Enter attendance data in the **Attendance** sheet.
3. Copy any two values from Marks and paste them into Student_Data.
4. Change the order of sheets by dragging a sheet tab.
5. Save the workbook again.

Objective :

To help learners practice working with multiple worksheets and organizing data across sheets.



Check Your Progress 1

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. How do you switch between worksheets?

.....

.....

.....

2. Why is it useful to keep related data in separate worksheets?

.....

.....

.....

3. Write one example of managing multiple worksheets.

.....

.....

.....

5.5. SUMMARY

This unit explained the structure of Excel workbooks and worksheets. Learners studied how to create, navigate, rename, delete, and organize worksheets. The unit also covered managing multiple sheets and maintaining proper workbook structure. Understanding workbook and worksheet organization helps store data systematically and supports efficient Excel usage.

5.6. GLOSSARY

- **Worksheet** – A single sheet where data is entered.
- **Sheet Tab** – Used to move between worksheets.
- **Rename Sheet** – Changing worksheet name.
- **Delete Sheet** – Removing unwanted worksheet

5.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 5.1.

1. **Answer** : A workbook is an Excel file that contains one or more worksheets.
2. **Answer** : A worksheet is a single sheet inside a workbook where data is entered in rows and columns.
3. **Answer** : By clicking the plus (+) icon near the sheet tabs.

Check Your Progress 5.2.

1. **Answer** : By clicking on the sheet tabs at the bottom of the workbook.
2. **Answer** : It keeps information organized and makes data easy to manage and understand.
3. **Answer** : Keeping student details in one sheet and marks in another within the same workbook.

5.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3729	

NOTES

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5.9. REFERENCE

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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

5.10. EXERCISE

Part 1**A. Multiple choice question**

1. Which software is used for creating spreadsheets?
 - (a) MS Word
 - (b) MS PowerPoint
 - (c) MS Excel
 - (d) Paint
2. What is an Excel file called?
 - (a) Document
 - (b) Workbook
 - (c) Slide
 - (d) Folder
3. Which component displays formulas of the selected cell?
 - (a) Ribbon
 - (b) Status Bar
 - (c) Formula Bar
 - (d) Task Pane
4. Which option is used to save an Excel file?
 - (a) Ribbon
 - (b) File Tab

- (c) Status Bar
- (d) Worksheet
- 5. A worksheet consists of:
 - (a) Charts and tables
 - (b) Rows and columns
 - (c) Files and folders
 - (d) Menus and toolbars

Answers with Explanations

1. (c) Workbook

Explanation : An Excel file is known as a workbook because it contains one or more worksheets inside it.

2. (c) Plus (+) icon

Explanation : Clicking the plus (+) icon next to sheet tabs creates a new worksheet in the workbook.

3. (c) Switch worksheets

Explanation : Sheet tabs help move from one worksheet to another within the same workbook.

4. (b) Rename sheet

Explanation : Renaming allows you to give meaningful names such as Marks or Expenses to worksheets.

5. (c) Multiple worksheets

Explanation : A workbook can hold many worksheets, allowing different data to be stored in one file.

B. Small Answer Type Questions

1. What is an Excel workbook?
2. What is a worksheet?
3. What is a cell in Excel?
4. What is a cell reference?

Part 2

C. Long Answer Type Questions (Answer in about 200 words)

1. What is Microsoft Excel? Explain its importance.
2. Describe the uses of Excel in education and industry.
3. Explain the main components of the Excel working environment.

NOTES

4. What is a workbook and worksheet? Explain with examples.
5. Explain the role of Excel in modern computing.

Part 3

D. Long Answer Type Questions (Answer in about 300 words)

1. Discuss the scope of Microsoft Excel and its applications in real life.
2. Explain Excel interface components such as Ribbon, Formula Bar, Status Bar, and Task Pane.
3. Describe file management in Excel using File Tab and Backstage View.
4. Explain workbook and worksheet structure and their practical usage.
5. Discuss how learning Excel enhances digital skills and employability.



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SLM FEEDBACK FORM

PROGRAMME : _____

COURSE : _____

BLOCK : _____

UNIT : _____

Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill up and send us the following questionnaire, which pertains to this block. If you find the space provided insufficient, kindly use a separate sheet.

Please mail to aisectcontent@aisect.org/ for online submission please scan QR code:

Questionnaire

1. Name : _____

2. Enrolment No. :

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3. How many hours did you need for studying the units? :

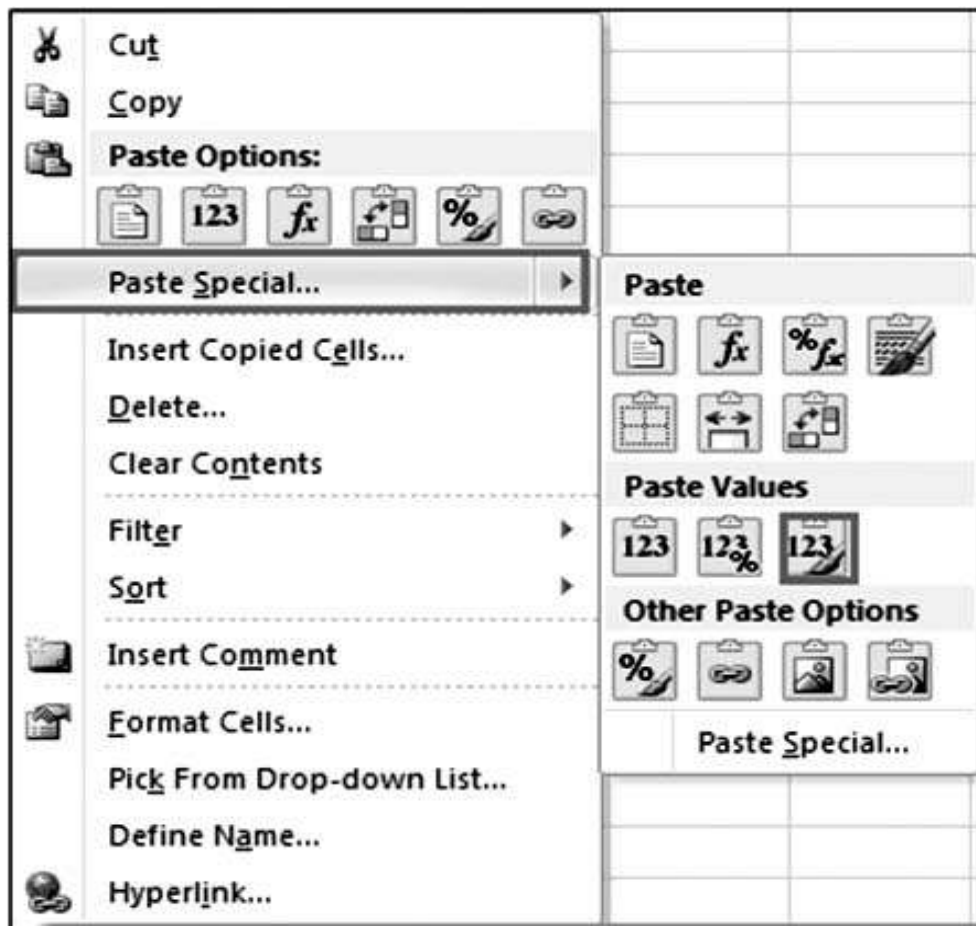
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4. Please give your reactions to the following items based on your reading of the block:

Items	Excellent	Very Good	Good	Poor	Give specific Examples (If poor)
Presentation Quality					
Language and Style					
Illustrations					
Used (diagrams, tables, etc.)					
Conceptual Clarity					
Check Your Progress Questions					
Suggested Readings - OER					

5. Any other comments:

Block II	COLUMNS & ROWS	45 – 70
Unit 6	Understanding Worksheet Structure	47
Unit 7	Managing Rows, Columns, and Ranges	55
Unit 8	Copying and Managing Data	63



Block II focuses on developing practical worksheet handling skills in Microsoft Excel. This block begins with an understanding of worksheet structure, helping learners recognize how data is arranged using rows, columns, and cells. It then moves to managing rows, columns, and ranges, enabling students to resize, insert, delete, and organize data efficiently. Finally, the block covers copying and managing data, introducing techniques such as copy, paste, AutoFill, and range selection to improve accuracy and speed. Together, these three units strengthen hands-on Excel skills, enhance data organization abilities, and prepare learners to handle real-life spreadsheet tasks with confidence and efficiency.

UNIT – 6

UNDERSTANDING WORKSHEET STRUCTURE

NOTES

UNIT STRUCTURE

- 6.1 Introduction**
- 6.2 Objective**
- 6.3 Overview of Worksheet Structure**
- 6.4 Scope of Worksheet Usage in Education and Industry**
- 6.5 Summary**
- 6.6 Glossary**
- 6.7 Answer to Check Your Progress**
- 6.8 Suggested Readings – OER**
- 6.9 Reference**
- 6.10 Exercise**

6.1. INTRODUCTION

In the previous units, you learned about Microsoft Excel, its working environment, file management, and workbook structure. You also practiced creating worksheets and managing data using rows and columns. This knowledge forms the foundation for understanding how information is arranged inside a worksheet. Building on this learning, this unit introduces worksheet structure and explains how Excel organizes data for easy access and analysis.

This unit focuses on the layout of a worksheet, including rows, columns, cells, and sheet tabs. You will learn about key worksheet components and their importance in data organization. The unit also highlights how worksheet structure supports data management in education, industry, and modern computing. Understanding these concepts will help you work more accurately and confidently with spreadsheets.

While studying this unit, try to relate the concepts to real-life situations such as preparing marksheets, attendance records, or expense lists. Practice identifying worksheet components on your screen and organizing sample data. This hands-on approach will help you understand worksheet structure clearly and prepare you for advanced Excel operations in upcoming units.

6.2. OBJECTIVE

After studying this unit, you will be able to:

ADVANCED EXCEL

NOTES

- Identify the main components of an Excel worksheet.
- Explain the structure of rows, columns, and cells.
- Understand the importance of worksheet layout in data organization.
- Describe how worksheets are used in education and industry.
- Apply worksheet structure concepts for efficient data handling.

6.3. OVERVIEW OF WORKSHEET STRUCTURE

An Excel worksheet is the main working area where data is entered and organized. It is made up of rows, columns, and cells arranged in a grid format. Each worksheet provides a structured layout that helps users store, calculate, and analyze information easily.

Every worksheet belongs to a workbook, and a workbook can contain multiple worksheets. Understanding worksheet structure is important because it allows you to enter data correctly, apply formulas, and present information clearly.

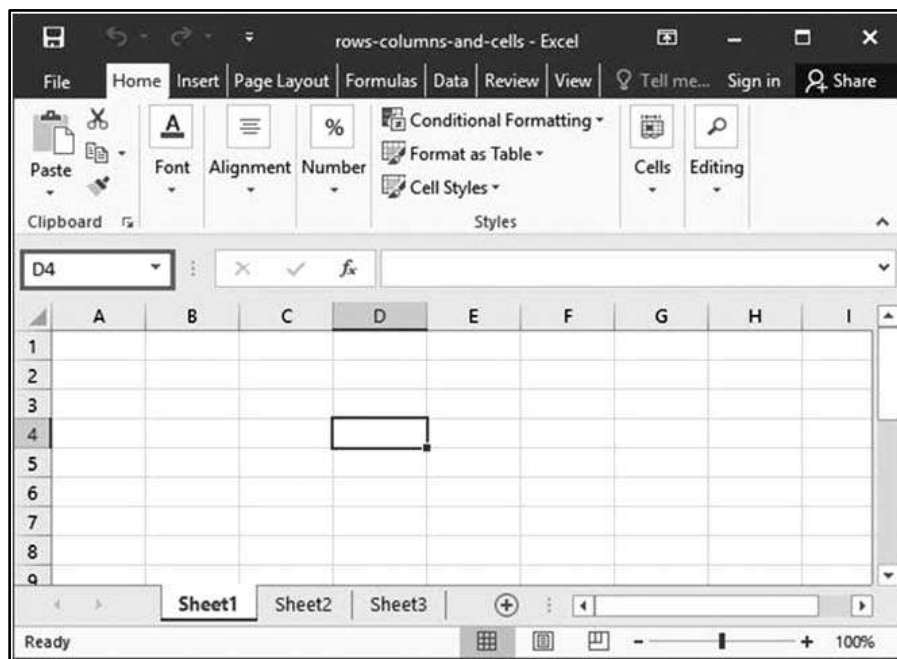


Fig. 6.1 : Structure of an Excel worksheet showing rows, columns, cells, and sheet tabs

6.3.1. About Worksheet Layout in Excel

The worksheet layout consists of horizontal rows (numbered 1, 2, 3...) and vertical columns (labeled A, B, C...). The point where a row and column meet is called a **cell**, such as A1 or B3.

At the bottom of the screen, **sheet tabs** allow you to move between different worksheets. This layout helps divide information into sections—for example, one sheet for marks, another for attendance, and another for expenses.

A well-organized worksheet layout makes data easy to read and manage.

6.3.1.1. Key Components of a Worksheet (Rows, Columns, Cells, Sheet Tabs)

- **Rows** – Horizontal lines that hold data across the worksheet.
- **Columns** – Vertical lines used to organize similar types of information.
- **Cells** – Small boxes where data is entered (example: A1).
- **Sheet Tabs** – Used to switch between worksheets within a workbook.

These components work together to create a clear and systematic data structure.

6.3.2. Importance of Worksheet Structure in Data Organization

Worksheet structure plays a major role in managing data efficiently. Proper use of rows and columns helps arrange information logically. Cells store values and formulas, while sheet tabs separate different datasets.

For example, in a student workbook, one worksheet may contain personal details, another marks, and another attendance. This structured approach reduces confusion, saves time, and improves accuracy.

Understanding worksheet structure also supports advanced Excel tasks such as sorting, filtering, and data analysis.



Activity 6.1.

1. Open Excel and create a new workbook.
2. Enter your name in cell A1.
3. Type numbers in cells A2 to A6.
4. Add a new worksheet and rename it “Practice”.
5. Switch between worksheets using sheet tabs.

Objective : To help learners identify worksheet components and practice basic navigation.



Check Your Progress 6.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is a worksheet ?

.....

NOTES

2. What is the intersection of a row and a column called?

3. Name any two components of a worksheet.

6.4. SCOPE OF WORKSHEET USAGE IN EDUCATION AND INDUSTRY

Worksheets are widely used in both education and industry because they help organize information clearly and systematically. In schools and colleges, worksheets are used to prepare marksheets, attendance records, project data, and academic reports. Students also use worksheets for assignments and simple calculations.

In offices and industries, worksheets support daily tasks such as sales tracking, payroll preparation, inventory management, and budgeting. Each worksheet can store a different type of data, making it easy to manage large amounts of information within a single workbook.

Because worksheets allow structured data entry using rows and columns, they improve accuracy and save time. Their flexibility makes them useful for learners, teachers, and professionals alike.

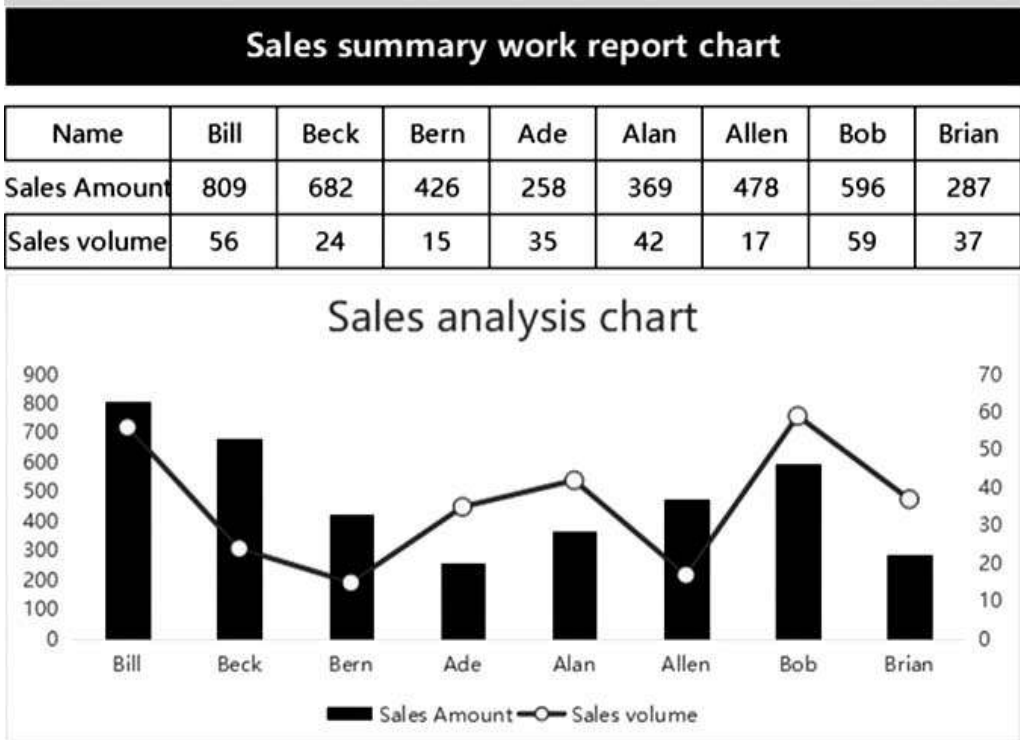


Fig. 6.2 : Examples of worksheet usage in education and industry

6.4.1. Role of Worksheets in Modern Computing

In modern computing, worksheets play an important role in data handling and digital productivity. They help users enter, store, calculate, and analyze information quickly. Worksheets also support charts, sorting, filtering, and formulas, which assist in making informed decisions.

Students use worksheets to build basic computer skills, while professionals rely on them for reports and analysis. Worksheets are also used as a base for advanced applications such as dashboards and business reports.

Learning worksheet structure prepares learners for higher-level Excel functions and real-world digital tasks.

NOTES



Activity 6.2.

1. Create a worksheet named **Monthly_Expenses**.
2. Enter items and amounts.
3. Use a simple formula to calculate the total.

Objective:

To understand how worksheets support everyday computing tasks.



Check Your Progress 6.2

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why are worksheets important in modern computing?

.....

2. Write one example of worksheet use in daily life.

.....

6.5. SUMMARY

This unit explained the structure of an Excel worksheet and its key components such as rows, columns, cells, and sheet tabs. Learners studied how worksheets are organized within a workbook and how proper layout supports accurate data entry and management. The unit also highlighted the use of worksheets in education and industry, along with their role in modern computing. Understanding worksheet structure helps learners organize information clearly, work efficiently, and prepares them for advanced Excel tasks.

6.6. GLOSSARY

- **Worksheet** – A single sheet in Excel where data is entered in rows and columns.
- **Workbook** – An Excel file that contains one or more worksheets.
- **Row** – A horizontal line of cells in a worksheet.
- **Column** – A vertical line of cells in a worksheet.
- **Cell** – The intersection of a row and a column where data is entered.
- **Cell Address** – The unique name of a cell (for example, A1).
- **Sheet Tab** – Used to move between worksheets.
- **Active Cell** – The currently selected cell.

6.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 6.1.

1. **Answer** : A worksheet is a sheet in Excel used to enter and organize data.
2. **Answer** : The intersection of a row and a column is called a cell.
3. **Answer** : Rows and columns (or cells and sheet tabs).

Check Your Progress 6.2.

1. **Answer** : Worksheets help organize data, perform calculations, and support analysis.
2. **Answer** : Excel is used in industry for preparing monthly sales reports and analyzing business performance.

6.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3730	

6.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

6.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. A worksheet mainly consists of:
 - (a) Files and folders
 - (b) Rows and columns
 - (c) Charts only
 - (d) Toolbars
2. The intersection of a row and column is called:
 - (a) Sheet
 - (b) Cell
 - (c) Range
 - (d) Workbook
3. Sheet tabs are used to:
 - (a) Save files
 - (b) Insert formulas
 - (c) Switch worksheets
 - (d) Print data
4. An Excel file is called a:
 - (a) Cell
 - (b) Worksheet
 - (c) Workbook
 - (d) Folder
5. Which of the following is a worksheet component?
 - (a) Printer
 - (b) Ribbon
 - (c) Cell
 - (d) File Explorer

Answers with Explanations :**1. (b) Rows and columns**

Explanation : A worksheet is organized using rows and columns, and their intersection forms cells.

2. (b) Cell

Explanation : A cell is where data is entered, formed by the meeting point of a row and a column.

3. (c) Switch worksheets

Explanation : Sheet tabs help move between different worksheets within the same workbook.

4. (c) Workbook

Explanation : A workbook is the main Excel file that contains one or more worksheets.

5. (c) Cell

Explanation : Cells are basic worksheet elements used to store data.

B. Small Answer Type Questions

1. What is a row in Excel?
2. What is a column in Excel?
3. How are rows identified?
4. How are columns identified?

Part 2**C. Long Answer Type Questions (200 words)**

1. Explain worksheet structure and its components.
2. Describe the importance of worksheets in education and industry.

Part 3**D. Long Answer Type Question (300 words)**

1. Explain the structure of an Excel worksheet and discuss its importance in data organization.
2. Discuss the role of worksheet structure in modern computing and real-life applications.

UNIT – 7

MANAGING ROWS, COLUMNS, AND RANGES

NOTES

UNIT STRUCTURE

- 7.1 Introduction**
- 7.2 Objective**
- 7.3 Managing Rows, Columns, and Ranges**
- 7.4 Managing Data Using Ranges**
- 7.5 Summary**
- 7.6 Glossary**
- 7.7 Answer to Check Your Progress**
- 7.8 Suggested Readings – OER**
- 7.9 Reference**
- 7.10 Exercise**

7.1. INTRODUCTION

In the previous unit, you learned about worksheet structure and how data is organized using rows, columns, and cells. You also understood how worksheets help manage information systematically. Building on that knowledge, this unit focuses on practical handling of rows, columns, and ranges.

This unit explains how to select, insert, delete, resize, hide, and unhide rows and columns. It also introduces ranges and shows how multiple cells can be selected and managed together. These skills are essential for arranging data neatly and working efficiently in Excel.

While studying this unit, practice each step directly in Excel. Try organizing simple data such as student marks or monthly expenses. Hands-on practice will help you understand how rows, columns, and ranges support real-life spreadsheet tasks.

7.2. OBJECTIVE

After studying this unit, you will be able to:

- Select rows, columns, and ranges.
- Insert and delete rows and columns.
- Change row height and column width using AutoFit.
- Hide and unhide rows and columns.
- Use ranges for efficient data handling.

NOTES

7.3. MANAGING ROWS, COLUMNS, AND RANGES

Rows and columns form the basic structure of an Excel worksheet. Rows run horizontally and columns run vertically. Managing them properly helps keep data organized and easy to read.

You can select a row by clicking its number and select a column by clicking its letter. To insert or delete a row or column, right-click on it and choose the required option. Excel also allows you to hide rows or columns temporarily and unhide them whenever needed.

A **range** is a group of selected cells. Ranges are useful when you want to format many cells together or apply formulas to multiple values at the same time.

7.3.1. Selecting, Inserting, and Deleting Rows & Columns

Selecting rows and columns allows you to edit or format many cells at once. Inserting rows or columns creates space for new data, while deleting removes unwanted information. These options help rearrange worksheet content quickly and efficiently.

7.3.1.1. Changing Row Height and Column Width (AutoFit)

Row height and column width control how data appears on the screen. Sometimes text or numbers do not fit properly inside cells. The **AutoFit** option automatically adjusts the size of rows or columns based on their content. This improves visibility and keeps worksheets neat.

7.3.2 Working with Ranges

A range refers to multiple selected cells, such as A1:A10. You can select a range by dragging the mouse across cells or by holding the Shift key while using arrow keys. Ranges are commonly used for data entry, formatting, and calculations. Working with ranges saves time and ensures consistent formatting.

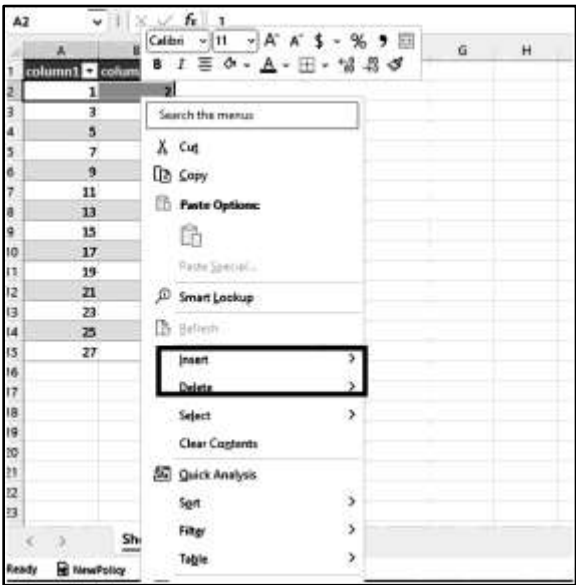


Fig. 7.1: Selecting, Inserting, and Deleting Rows & Columns



Activity 7.1.

Create a worksheet named **Practice**.

1. Enter numbers in cells A1 to A5.
2. Insert a new row between rows 2 and 3.
3. Use AutoFit on column A.
4. Select cells A1 to A6 as a range and apply bold formatting.

Objective : To practice managing rows, columns, and ranges.

NOTES



Check Your Progress 7.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. How do you select an entire column?

.....

.....

.....

2. What is AutoFit used for?

.....

.....

.....

3. What is a range?

.....

.....

.....

7.4. MANAGING DATA USING RANGES

Ranges make data handling easier. You can apply borders, change fonts, or use formulas on a complete range instead of one cell at a time. Ranges also help while sorting or filtering data. Proper use of ranges improves accuracy and speed in spreadsheet tasks.

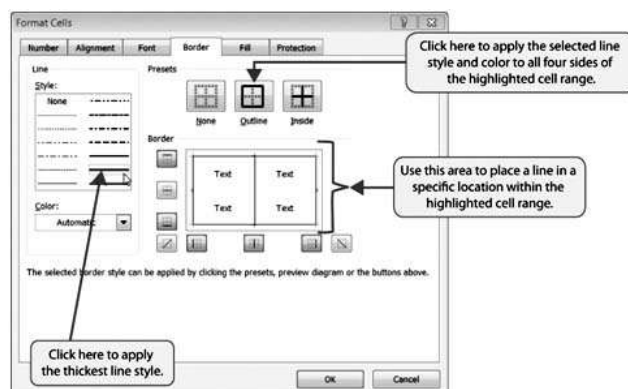


Fig. 7.2: Managing data using ranges

NOTES

7.4.1. Practical Handling of Rows, Columns, and Ranges

In real-life work, rows and columns are used to organize information such as student marks or expenses. Ranges help calculate totals and averages. Regular practice of selecting, resizing, and organizing data builds confidence and efficiency.



Activity 7.2.

- 1. Create a worksheet named Marks.
- 2. Enter five student names in column A and their marks in column B.
- 3. Select the range A1:B6.
- 4. Apply borders and bold the heading row.
- 5. Use a formula to calculate the total and average marks below the range.

Objective:

To practice selecting ranges and applying formatting and formulas to manage data efficiently.



Check Your Progress 7.2.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

- 1. Why is using a range better than formatting one cell at a time?
.....
.....
.....
.....
- 2. Name any two operations that can be applied to a range.
.....
.....
.....
.....
- 3. Give one real-life example where ranges are useful.
.....
.....
.....
.....

7.5. SUMMARY

This unit explained how to manage rows, columns, and ranges in Excel. Learners studied selecting, inserting, deleting, hiding, and resizing rows and columns. The unit also introduced ranges and their role in formatting and calculations. Understanding these features helps organize data clearly and improves efficiency in spreadsheet work.

7.6. GLOSSARY

- **Row** – Horizontal line of cells.
- **Column** – Vertical line of cells.
- **Cell** – Intersection of a row and column.
- **Range** – Group of selected cells.
- **AutoFit** – Automatically adjusts row height or column width.
- **Hide/Unhide** – Temporarily removes or shows rows and columns.

7.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 7.1.

1. **Answer:** By clicking on the column letter at the top of the worksheet.
2. **Answer :** AutoFit is used to automatically adjust the row height or column width to fit the cell content.
3. **Answer :** A range is a group of selected cells used together for data entry, formatting, or calculations.

Check Your Progress 7.2.

1. Because it saves time and applies changes to many cells together, improving speed and accuracy.
2. Formatting (borders/fonts) and formulas (SUM/AVERAGE).
(Sorting or filtering are also correct.)
3. Calculating total and average marks for students (or monthly expenses).

7.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3731	

NOTES

7.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
- National Programme on Technology Enhanced Learning (NPTEL). (2022). Spreadsheet applications and data handling. IIT Consortium.
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- Walkenbach, J. (2019). Excel 2019 Bible. Wiley.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

7.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. Rows in Excel run:
 - (a) Vertically
 - (b) Horizontally
 - (c) Diagonally
 - (d) Randomly
2. A group of selected cells is called:
 - (a) Worksheet
 - (b) Workbook
 - (c) Range
 - (d) Ribbon
3. AutoFit is used to:
 - (a) Insert rows
 - (b) Delete columns
 - (c) Adjust cell size
 - (d) Copy data

4. Which option is used to insert a new row in Excel?
 - (a) Format
 - (b) Insert
 - (c) AutoFit
 - (d) Paste
5. Which key is commonly used along with arrow keys to select a range?
 - (a) Ctrl
 - (b) Alt
 - (c) Shift
 - (d) Tab

NOTES

Answer with Explanation**1. (b) Horizontally**

Explanation : Rows move from left to right across the worksheet and are identified by numbers.

2. (c) Range

Explanation : A range refers to multiple cells selected together for formatting, data entry, or calculations.

3. (c) Adjust cell size

Explanation : AutoFit automatically adjusts row height or column width to fit the content inside cells.

Sure — here are the **answers with short explanations** for the two new MCQs:

4. (b) Insert

Explanation : The Insert option adds a new row or column to create space for additional data.

5. (c) Shift

Explanation : Holding the Shift key while using arrow keys selects multiple adjacent cells, creating a range.

B. Small Answer Type Questions

1. How can a row be inserted?
2. How can a column be deleted?
3. What is a cell range?
4. How can rows be resized?

Part 2

C. Long Answer Type (200 words)

1. Explain managing rows and columns in Excel.
2. Describe ranges and their importance.

Part 3

D. Long Answer Type Questions (300 words)

1. Discuss selecting, inserting, deleting, hiding, and resizing rows and columns.
2. Discuss the practical use of ranges in Excel

UNIT – 8

COPYING AND MANAGING DATA

UNIT STRUCTURE

NOTES

UNIT STRUCTURE

- 8.1 Introduction**
- 8.2 Objective**
- 8.3 Copying Data in Excel**
- 8.4 Managing Copied Data**
- 8.5 Summary**
- 8.6 Glossary**
- 8.7 Answer to Check Your Progress**
- 8.8 Suggested Readings – OER**
- 8.9 Reference**
- 8.10 Exercise**

8.1 INTRODUCTION

In the previous unit, you learned how to manage rows, columns, and ranges in Excel. You practiced selecting cells, resizing columns, and organizing worksheet data. These skills help you prepare clean and readable spreadsheets. Building on this knowledge, this unit focuses on copying and managing data, which is essential when working with repeated or large amounts of information.

This unit introduces Copy and Paste commands, Paste Special options, and AutoFill. You will learn how to duplicate values, formats, and formulas and how to fill number or date series automatically. These tools help reduce manual typing and improve work speed.

While studying this unit, try every feature in Excel. Practice copying marks, filling roll numbers, or repeating formulas. Relating these activities to real-life tasks such as preparing reports or attendance sheets will help you understand the unit better.

8.2. OBJECTIVE

After studying this unit, you will be able to:

- Copy and paste data using different methods.
- Use Paste Special options effectively.
- Apply AutoFill for fast data entry.

NOTES

- Manage copied data accurately.
- Use copying tools for real-life spreadsheet tasks.

8.3. COPYING DATA IN EXCEL

Copying data means duplicating information from one place to another. Instead of typing the same data again, Excel allows you to copy values, text, and formulas instantly.

Copying can be done using:

- Keyboard shortcuts (Ctrl+C, Ctrl+V)
- Right-click menu
- Ribbon commands

This feature is useful when preparing similar records such as student lists, expense tables, or sales reports.

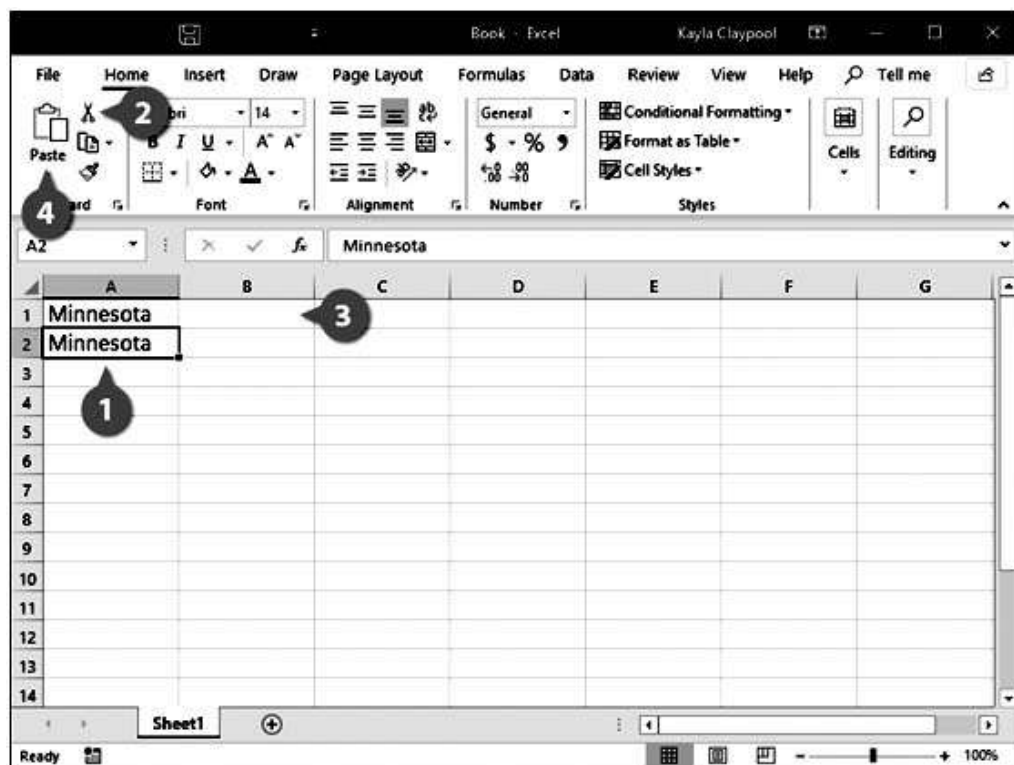


Fig. 8.1 : Copy-Paste, Paste Special options, and AutoFill using the fill handle

8.3.1. Using Copy and Paste Commands

Steps:

1. Select the cell or range.
2. Press **Ctrl + C** or right-click → Copy.
3. Select destination cell.
4. Press **Ctrl + V** or right-click → Paste.

Excel copies everything including values, formulas, and formatting.

Example:

If you copy a formula from one cell, Excel automatically adjusts references when pasted elsewhere.

8.3.1.1. Paste Special (Values, Formats, Formulas)

Paste Special allows you to paste only what you need.

Common options:

- **Values** – pastes only results (no formulas)
- **Formats** – pastes cell style
- **Formulas** – pastes formulas only

Use Case:

If you copy calculated marks but want only final numbers, use *Paste Special* → *Values*.

This prevents accidental formula changes.

8.3.2. Using AutoFill

AutoFill fills data automatically using patterns.

Examples :

- Numbers: 1, 2, 3...
- Dates: 1 Jan, 2 Jan...
- Formulas copied downward

Drag the **fill handle** (small square at cell corner).

AutoFill saves time when entering serial numbers, months, or repeated formulas.



Activity 8.1.

1. Enter numbers **10, 20, 30** in cells A1:A3.
2. Copy A1:A3 and paste them into B1:B3.
3. In C1, type **=A1+B1** and use AutoFill to copy the formula down to C3.
4. Copy column C and use **Paste Special** → **Values** in column D.
5. Enter **1** in E1 and drag AutoFill down to E10.

Objective : To practice Copy–Paste, Paste Special, and AutoFill.



Check Your Progress 8.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Which shortcut keys are used for Copy and Paste?

.....

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2. Why do we use **Paste Special** → **Values**?

.....

3. What is the **fill handle** used for?

.....

4. What happens when you AutoFill a formula downward?

.....

8.4. MANAGING COPIED DATA

After copying, data must be checked carefully. Sometimes formulas change or formatting is misplaced.

Good practices:

- Verify pasted values
- Check formulas
- Use Paste Special when needed
- Avoid overwriting important data

Managing copied data ensures correctness and reliability.

	A	B	C	D	E
1	Date	Category	Product	ShipDate	C
5	8/7/2022	Cookies	Arrowroot	8/10/2022	
6	8/9/2022	Cookies	Chocolate Chi	8/9/2022	
7	8/11/2022	Bars	Bran	8/15/2022	
8	8/13/2022	Bars	Banana	8/21/2022	
9	8/15/2022	Cookies	Chocolate Chi	9/22/2022	
10	8/17/2022	Crackers	Whole Grain	10/10/2022	
11	8/19/2022	Cookies	Arrowroot	10/26/2022	
12	8/21/2022	Cookies	Chocolate Chip		
13	8/23/2022	Bars	Carrot	8/23/2022	

Fig. 8.2 : Managing copied data in Excel

8.4.1. Role of Worksheets in Modern Computing

Real-life examples :

- Copy student marks to multiple sheets
- AutoFill roll numbers

- Paste formats to make reports uniform

These tools support productivity in education, offices, and personal budgeting.

NOTES



Activity 8.2.

1. Enter items in column A and amounts in column B (at least five entries).
2. In B7, calculate the total using **=SUM(B2:B6)**.
3. Copy B7 and paste it into C7 using Paste **Special** → **Values**.
4. Use AutoFill to extend a serial number column from 1 to 10.
5. Review all pasted values and formats for correctness.

Objective : To practice reviewing and correcting copied data.



Check Your Progress 8.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why should copied data be reviewed after pasting?

.....

2. Which Paste Special option is used to keep only final results?

.....

3. Mention one good practice while managing copied data.

.....

4. Why is it important to check AutoFill results?

.....

8.5. SUMMARY

This unit explained the copying and managing data using Copy-Paste, Paste Special, and AutoFill. Learners practiced duplicating values, formats, and formulas and filling data automatically. Proper handling of copied data improves speed, accuracy, and worksheet organization. These tools form the foundation for efficient spreadsheet work.

8.6. GLOSSARY

- Copy – Duplicate data
- Paste – Insert copied data
- Paste Special – Paste selected elements
- AutoFill – Automatic data filling
- Fill Handle – Tool for AutoFill

8.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 8.1.

1. **Answer :** Ctrl + C is used to copy and Ctrl + V is used to paste.
2. **Answer :** Paste Special → Values is used to paste only the final numbers or text without copying formulas or formatting.
3. **Answer :** The fill handle is used to quickly extend numbers, dates, or formulas using AutoFill.
4. **Answer :** When you AutoFill a formula downward, Excel copies the formula and automatically adjusts cell references for each row.

Check Your Progress 8.2

1. **Answer :** To avoid errors such as incorrect formulas, misplaced formats, or overwritten values.
2. **Answer :** Paste Special → Values.
3. **Answer :** Always verify pasted values and formulas before finalizing the worksheet.
4. **Answer :** Because AutoFill follows patterns and may fill incorrect sequences if not reviewed.

8.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectionline.com/User/UnitUrls?unitId=3732	

8.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

8.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. Which shortcut key is used to copy data?
 - (a) Ctrl+V
 - (b) Ctrl+X
 - (c) Ctrl+C
 - (d) Ctrl+Z
2. Paste Special is mainly used to:
 - (a) Delete cells
 - (b) Insert rows
 - (c) Paste selected content
 - (d) Print worksheet
3. AutoFill helps to:
 - (a) Format cells
 - (b) Delete data
 - (c) Fill data series
 - (d) Hide columns
4. Which tool is used to drag AutoFill?
 - (a) Ribbon
 - (b) Formula Bar
 - (c) Fill Handle
 - (d) Status Bar
5. Which command duplicates selected content?
 - (a) Paste
 - (b) Copy
 - (c) Delete
 - (d) Insert

Answers with Explanations :**1. (b) Ctrl+C**

Explanation: shortcut key is used to copy data

2. (b) Paste selected content

Explanation : Paste Special allows pasting only values, formats, or formulas.

3. (c) Fill data series

Explanation : AutoFill automatically extends numbers, dates, or formulas.

4. (c) Fill Handle

Explanation : The fill handle is the small square at the cell corner.

5. (b) Copy

Explanation : Copy duplicates selected data.

B. Small Answer Type Questions

1. What is the Copy command?
2. What is the Paste command?
3. What is AutoFill in Excel?
4. How can data be moved between cells?

Part 2**C. Long Answer Type (200 Words)**

1. Explain Copy, Paste, and Paste Special in Excel.
2. Describe AutoFill and its importance in spreadsheet work.

Part 3**D. Long Answer Type (300 Words)**

1. Explain different methods of copying and managing data in Excel with suitable examples.
2. Discuss the practical use of AutoFill and Paste Special in real-life spreadsheet applications such as marksheets, expense tracking, and reports.

**DR. C.V. RAMAN UNIVERSITY**

Chhattisgarh, Bilaspur

AN AISECT GROUP UNIVERSITY

Approved by : PCI / ANTE / NCYE / BCI / Member of : APU / Joint Committee : UGC / OER / ANTE / Recognized by : UGC / A NAAC Accredited University

**DR. C. V. RAMAN UNIVERSITY (C.G.)****SLM FEEDBACK FORM**

PROGRAMME : _____

COURSE : _____

BLOCK : _____

UNIT : _____

Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill up and send us the following questionnaire, which pertains to this block. If you find the space provided insufficient, kindly use a separate sheet.

Please mail to aisectcontent@aisect.org / for online submission please scan QR code:**Questionnaire**

1. Name : _____

2. Enrolment No. :

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3. How many hours did you need for studying the units? :

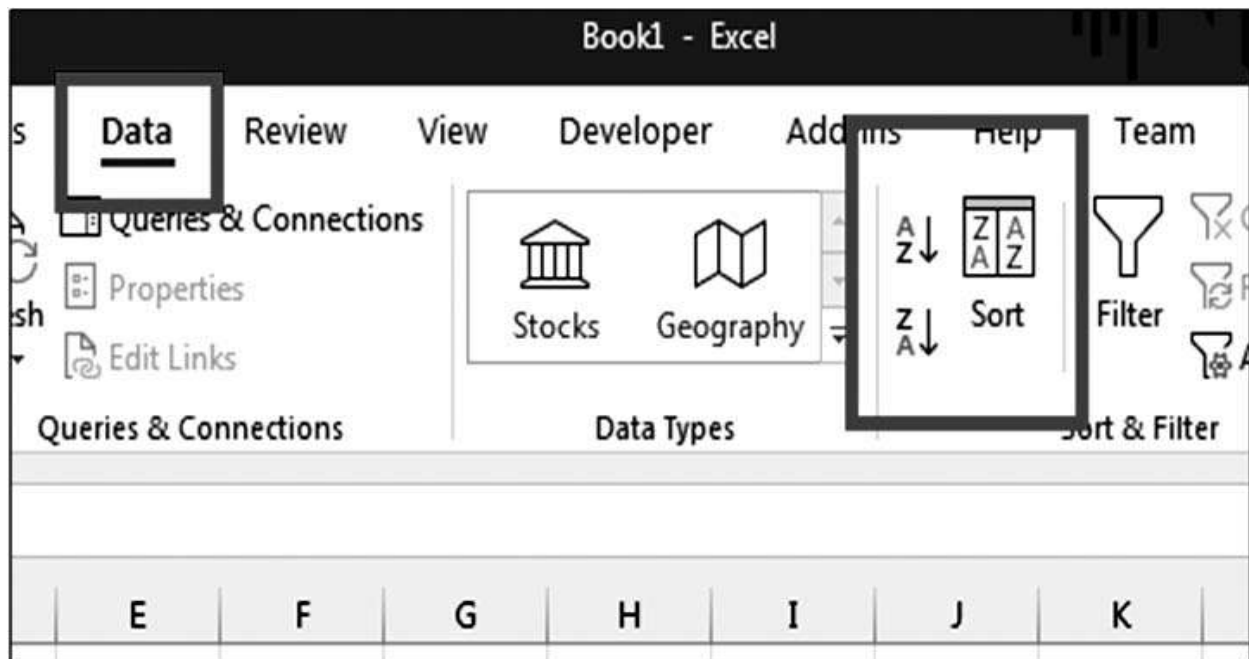
--

4. Please give your reactions to the following items based on your reading of the block:

Items	Excellent	Very Good	Good	Poor	Give specific Examples (If poor)
Presentation Quality					
Language and Style					
Illustrations					
Used (diagrams, tables, etc.)					
Conceptual Clarity					
Check Your Progress Questions					
Suggested Readings - OER					

5. Any other comments:

Block III	CREATING FORMULAS AND DATA ANALYSIS	73 – 102
Unit 9	Formulas and Functions Basics	75
Unit 10	Advanced Functions	83
Unit 11	Data Organization and Preparation	93



Creating Formulas and Data Analysis builds on the foundational Excel skills by introducing learners to formulas, functions, and data preparation techniques essential for effective spreadsheet work. This block begins with Formulas and Functions Basics, helping learners understand how calculations are performed and how simple functions automate everyday tasks. It then advances to Advanced Functions, where students explore powerful tools such as lookup and logical functions to handle complex data scenarios. Finally, the block focuses on Data Organization and Preparation, guiding learners on arranging, cleaning, and structuring data for accurate analysis. Together, these three units strengthen analytical skills, improve data-handling efficiency, and prepare learners for real-world Excel applications and higher-level data processing tasks in upcoming blocks.

UNIT – 9

FORMULAS AND FUNCTIONS BASICS

NOTES

UNIT STRUCTURE

- 9.1 Introduction**
- 9.2 Objective**
- 9.3 Understanding Formulas in Excel**
- 9.4 Using AutoSum**
- 9.5 Summary**
- 9.6 Glossary**
- 9.7 Answer to Check Your Progress**
- 9.8 Suggested Readings – OER**
- 9.9 Reference**
- 9.10 Exercise**

9.1. INTRODUCTION

In the previous units, you learned how to organize data using worksheets, rows, columns, ranges, and copying tools. These skills help you enter and manage information neatly. Building on this foundation, this unit introduces formulas and basic functions, which allow Excel to perform calculations automatically.

This unit explains how formulas are created, how cell references are used, and how common functions such as SUM, AVERAGE, COUNT, MAX, and MIN simplify everyday calculations. You will also learn how AutoSum quickly adds values.

While studying this unit, try each example in Excel—calculate totals, find averages, and count entries. Relate these activities to real-life tasks such as preparing marksheets, expense summaries, or sales totals. This hands-on practice will help you understand formulas and functions clearly.

9.2. OBJECTIVE

- After studying this unit, you will be able to:
- Create simple formulas in Excel.
- Use cell references correctly.
- Apply basic functions like SUM, AVERAGE, COUNT, MAX, and MIN.

NOTES

- Use AutoSum for quick totals.
- Perform basic calculations for real-life spreadsheet tasks.

9.3. UNDERSTANDING FORMULAS IN EXCEL

A **formula** is an expression that performs calculations in Excel. Every formula begins with an equal sign (=). For example:

=A1+B1

This formula adds the values of cells A1 and B1.

Formulas update automatically when cell values change, making Excel powerful for calculations.

9.3.1. Creating Simple Formulas

You can create formulas for:

Addition: =A1+B1

Subtraction: =A1-B1

Multiplication: =A1*B1

Division: =A1/B1

These basic formulas help calculate totals, differences, and ratios.

9.3.1.1. Using Cell References in Formulas

Instead of typing numbers, Excel uses cell references (like A1, B2). This allows formulas to change automatically when data changes.

Example:

If marks in B2 change, the total formula updates instantly.

9.3.2 Introduction to Functions

A **function** is a predefined formula in Excel that performs a specific task.

Syntax:

=FUNCTION_NAME(arguments)

Example:

=SUM(A1:A5)

Functions reduce manual work and improve accuracy.

	A	B	C	D
1	Data	Constant	Formula	Output
2	15000	2	=A2*\$B\$2	30000
3	12		=A3*\$B\$2	24
4	48		=A4*\$B\$2	96
5	729		=A5*\$B\$2	1458
6	1534		=A6*\$B\$2	3068
7	288	+	=A7*\$B\$2	576
8	4306		=A8*\$B\$2	8612
9				

Fig. 9.1: Formulas in Excel.



Activity 9.1.

Open Microsoft Excel on your computer.

- 1. Enter numbers in cells B2 to B6.
- 2. In B7, write: =B2+B3.
- 3. In B8, use: =SUM(B2:B6).
- 4. Find average using =AVERAGE(B2:B6).
- 5. Apply MAX and MIN.

Objective : Practice formulas and functions.

NOTES



Check Your Progress 9.1.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

- 1. Which symbol starts every formula ?

.....
.....
.....

- 2. Write one example of a simple formula.

.....
.....
.....

- 3. Name any two Excel functions.

.....
.....
.....

9.3.2.1. Common Functions (SUM, AVERAGE, COUNT, MAX, MIN)

- SUM – Adds values
- AVERAGE – Finds mean
- COUNT – Counts numeric cells
- MAX – Finds highest value
- MIN – Finds lowest value

Examples:

=SUM(B2:B6)
=AVERAGE(B2:B6)
=MAX(B2:B6)

NOTES

9.4. USING AUTOSUM

AutoSum quickly inserts the SUM function.

Steps:

1. Select the cell below numbers.
2. Click **AutoSum** (Σ).
3. Press Enter.

Excel automatically selects the range.

9.4.1. Practical Use of Basic Functions

In real life, these functions help:

- Calculate total marks
- Find average expenses
- Count attendance
- Identify highest and lowest sales

Regular practice builds confidence and speed.

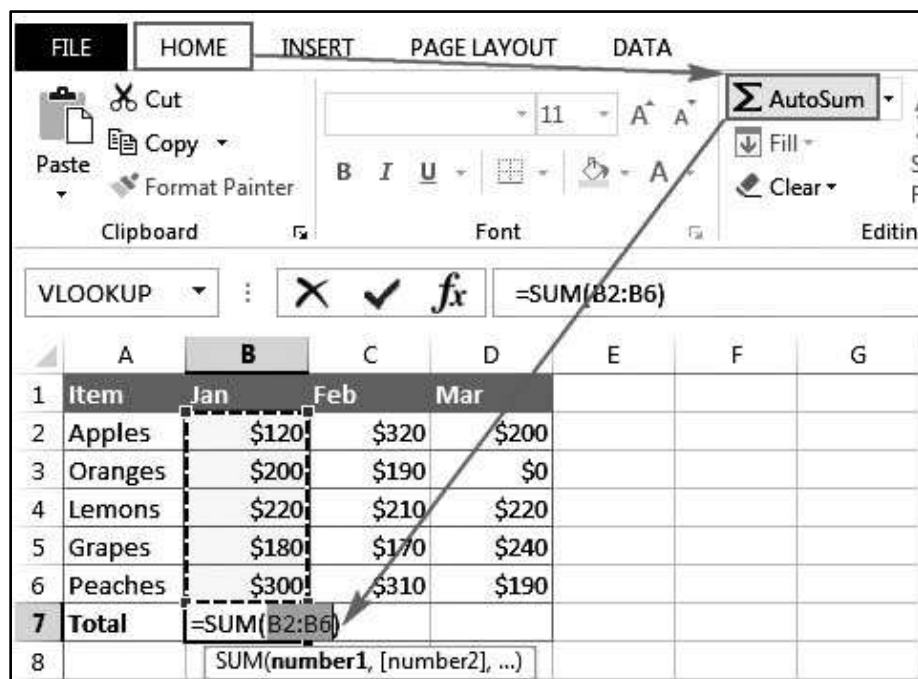


Fig. 9.2 : Using Autosum in Excel



Activity 9.2.

1. Enter five expense values in column C.
2. Use AutoSum to calculate total.
3. Apply AVERAGE to same values.
4. Use COUNT to count entries.

Objective : Practice AutoSum and basic functions.

☑ Check Your Progress 9.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Which button is used for quick addition?

.....

.....

.....

2. What does AVERAGE function do?

.....

.....

.....

3. Where is AutoSum located?

.....

.....

.....

NOTES**9.5. SUMMARY**

This unit introduced formulas and basic functions in Excel. Learners studied how to create simple formulas, use cell references, and apply functions such as SUM, AVERAGE, COUNT, MAX, and MIN. AutoSum was used for quick totals. These tools help perform calculations efficiently and form the foundation for advanced Excel operations.

9.6. GLOSSARY

- Formula – Expression used for calculation.
- Function – Built-in formula in Excel.
- Cell Reference – Address of a cell (A1).
- SUM – Adds values.
- AutoSum – Automatically inserts SUM.

9.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE**Check Your Progress 9.1.**

1. **Answer :** = (equal sign)

2. **Answer : Example :** =A1+B1

NOTES

3. Answer : SUM and AVERAGE

Check Your Progress 9.2

- 1. Answer :** AutoSum (Σ) button
- 2. Answer :** It finds the mean of selected values.
- 3. Answer :** On the Ribbon (Home tab / Editing group)

9.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3733	

9.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
- National Programme on Technology Enhanced Learning (NPTEL). (2022). Spreadsheet applications and data handling. IIT Consortium.
- AISECT Learning Services. (2024). Open educational resources on Microsoft Excel. AISECT Publications.
- Walkenbach, J. (2019). Excel 2019 Bible. Wiley.
- Harvey, G. (2020). Excel for dummies (7th ed.). Wiley.
- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

9.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. Every Excel formula must begin with:
 - (a) +
 - (b) #
 - (c) =
 - (d) @
2. Which function is used to find the average of values?

- (a) SUM
 - (b) COUNT
 - (c) MAX
 - (d) AVERAGE
3. Which function returns the highest value in a range?
- (a) MIN
 - (b) COUNT
 - (c) MAX
 - (d) SUM
4. AutoSum is mainly used to:
- (a) Format cells
 - (b) Add selected values
 - (c) Delete data
 - (d) Sort data
5. Which symbol is used for multiplication in Excel formulas?
- (a) x
 - (b) *
 - (c) %
 - (d) /

Answer with Explanation :

1. **(c) =**
Explanation : Every Excel formula must start with an equal sign.
2. **(d) AVERAGE**
Explanation : AVERAGE calculates the mean of selected values.
3. **(c) MAX**
Explanation : MAX returns the highest number from a range.
4. **(b) Add selected values**
Explanation : AutoSum automatically inserts the SUM function to add numbers.
5. **(b) ***
Explanation : The asterisk (*) symbol is used for multiplication in Excel.

B. Small Answer Type Questions

- 1. What is an Excel formula?
- 2. What is a function in Excel?
- 3. What is the SUM function?
- 4. What is the purpose of the AVERAGE function?

NOTES

Part 2

C. Long Answer Type (200 Words Each)

1. Explain formulas and basic functions in Excel with suitable examples.
2. Describe AutoSum and common Excel functions such as SUM, AVERAGE, MAX, MIN, and COUNT.

Part 3

D. Long Answer Type (300 Words Each)

1. Discuss the importance of formulas and functions in Excel.
2. Explain the practical use of basic Excel functions.

UNIT – 10

ADVANCED FUNCTIONS

NOTES

UNIT STRUCTURE

- 10.1 Introduction
- 10.2 Objective
- 10.3 Overview of Advanced Functions
- 10.4 Scope of Advanced Functions in Education and Industry
- 10.5 Summary
- 10.6 Glossary
- 10.7 Answer to Check Your Progress
- 10.8 Suggested Readings – OER
- 10.9 Reference
- 10.10 Exercise

10.1. INTRODUCTION

In the previous unit, you learned how to use basic formulas and functions such as SUM, AVERAGE, MAX, and MIN to perform simple calculations in Excel. These tools helped you work with numerical data easily and efficiently. However, real-life data handling often requires more than basic calculations. Sometimes we need Excel to make decisions, search for information, count values based on conditions, and clean text data.

This unit introduces Advanced Functions in Excel, which include logical, lookup, conditional, and text functions. You will learn how Excel uses the IF function to make decisions, VLOOKUP and HLOOKUP to find information from tables, COUNTIF to count values based on criteria, and text functions such as CONCAT, TEXT, and TRIM to manage text data. These functions help automate tasks and improve accuracy while working with large datasets.

While studying this unit, try to relate each function to real-life situations such as preparing marksheets, employee records, sales reports, or attendance sheets. Practicing these functions directly in Excel will help you understand their usefulness and apply them confidently in academic and professional work.

ADVANCED EXCEL

NOTES

10.2. OBJECTIVE

After studying this unit, you will be able to:

- Analyse the concept of advanced Excel functions.
- Use logical functions to make decisions in spreadsheets.
- Apply lookup functions to retrieve data from tables.
- Use conditional functions to count data based on criteria.
- Apply text functions to clean and combine information.
- Use advanced functions effectively for real-life data management tasks.

10.3. OVERVIEW OF ADVANCED FUNCTIONS

Advanced functions in Excel help us perform tasks that go beyond simple addition or averaging. These functions allow Excel to **think logically, search for information, count values based on conditions, and manage text data**. When working with large datasets such as marksheets, attendance records, sales reports, or employee details, advanced functions save time and reduce manual effort.

Unlike basic functions, advanced functions can compare values, retrieve related information from tables, and clean imported data. They help convert raw data into meaningful information. Some commonly used advanced functions include IF, COUNTIF, VLOOKUP, HLOOKUP, MATCH, CONCAT, TEXT, and TRIM. Learning these functions makes spreadsheet work faster, smarter, and more accurate.

10.3.1. About Logical, Lookup, Conditional, and Text Functions

Advanced Excel functions can be grouped into four main categories :

Logical Functions

These functions help Excel make decisions. The most common logical function is **IF**, which checks a condition and gives different results based on whether the condition is true or false.

Example:

=IF(B2>=40,"Pass","Fail")

This formula shows *Pass* if marks are 40 or above; otherwise, it shows *Fail*.

Lookup Functions

Lookup functions help find information from large tables.

- **VLOOKUP** searches vertically in the first column.

- **HLOOKUP** searches horizontally in the first row.
- **MATCH** finds the position of a value in a list.

These functions are useful for finding student names using roll numbers, salaries using employee IDs, or prices using product codes.

Conditional Functions

Conditional functions work based on criteria. The most commonly used one is **COUNTIF**, which counts cells that satisfy a condition.

Example :

=COUNTIF(C2:C20,"Pass")

This counts how many students passed.

Text Functions

Text functions help clean and combine text data.

- **CONCAT / CONCATENATE** joins text from multiple cells.
- **TEXT** formats numbers or dates.
- **TRIM** removes extra spaces.

These are especially useful when data is copied from external sources.

10.3.1.1. Key Features of Advanced Excel Functions

Advanced Excel functions offer several important features:

- Automatic decision-making using IF
- Fast data searching using VLOOKUP and HLOOKUP
- Position identification using MATCH
- Conditional counting using COUNTIF
- Text cleaning using TRIM
- Text joining using CONCAT
- Date and number formatting using TEXT

These features help reduce errors, improve speed, and ensure consistency in spreadsheets. They also allow users to automate repetitive tasks and create professional reports easily.

10.3.2. Importance of Advanced Functions in Data Management

Advanced functions play a vital role in managing data effectively. They help organize records, analyze performance, validate entries, and generate summaries. For example, teachers can prepare result sheets, offices can process payrolls, and businesses can analyze sales using these functions.

By using advanced functions, users can avoid manual calculations, maintain accuracy, and handle large amounts of information efficiently. These tools form the foundation for data analysis and decision-making in both academic and professional environments.

NOTES

	A	B	D	E	F	G	H	I
1	Name	Type 1	Total stats					
2	Mankey	Fighting	305					
3	Poliwrath	Water	510					
4	Victreebel	Grass	490					
5	Tentacool	Water	335					
6	Magnetron	Electric	465					
7	Dewgong	Water	475					
8	Cloyster	Water	525					
9	Onix	Rock	385					
10	Dragonair	Dragon	420					
11	Pidgeotto	Normal	349					
12	Rattata	Normal	253					
13	Beedrill	Bug	395					
14	Doduo	Normal	310					
15	Kingler	Water	475					
16	Nidoqueen	Poison	505					
17	Hitmonchan	Fighting	455					
18	Charmeleon	Fire	405					
19	Arbok	Poison	438					
20	Gastly	Ghost	310					
21	Magikarp	Water	200					
22								
23								

Fig. 10.1 : Overview of Advanced Functions.



Activity 10.1.

Open Microsoft Excel on your computer.

- 1. Enter student marks in column B (at least 5 students).
- 2. Use IF in column C to display Pass if marks ≥ 40 , else Fail.
- 3. Create a small lookup table for grades (A–D) and use VLOOKUP to assign grades.
- 4. Use COUNTIF to count how many students passed.
- 5. Enter first name in column D and last name in column E. Use CONCAT in column F to combine full names.
- 6. Add extra spaces in any text cell and use TRIM to remove them.

Objective : To practice logical, lookup, conditional, and text functions.



Check Your Progress 10.1.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

- 1. Which function is used to display different results based on a condition?

.....
.....
.....

2. Name one function used to search data from a table.

3. Which function counts values based on a condition?

4. What does the TRIM function do?

10.4. USING AUTOSUM

Advanced Excel functions have wide scope in both education and industry because they help manage, analyze, and interpret large amounts of data quickly and accurately. In today’s digital environment, data is continuously generated, and advanced functions allow users to convert this data into meaningful information.

In the **education sector**, advanced functions are used to prepare marksheets, calculate grades, analyze attendance, and generate performance reports. For example, the IF function helps assign Pass or Fail status, COUNTIF helps count absentees, and VLOOKUP helps retrieve student details from large databases. These functions reduce manual work and ensure accuracy in academic records.

In the **industry sector**, advanced functions are essential for payroll processing, sales analysis, inventory management, customer databases, and financial reporting. Companies use VLOOKUP to fetch employee details, COUNTIF to track targets, and text functions to clean imported data. By using these functions, organizations save time, reduce errors, and improve productivity. Thus, advanced Excel functions play a crucial role in handling real-world data efficiently.

10.4.1. Practical Use of Basic Functions

Advanced Excel functions play an important role in modern computing by supporting automation, data analysis, and decision-making. They help computers perform tasks that would otherwise require repeated human effort. Logical and lookup functions enable systems to process information intelligently and respond based on conditions.

In modern workplaces, advanced functions support digital workflows by connecting data across sheets, validating entries, and generating

NOTES

instant results. They form the foundation for data analysis, reporting, and business intelligence tools. Knowledge of these functions prepares learners for careers that involve data handling, analytics, and technology-driven decision-making.

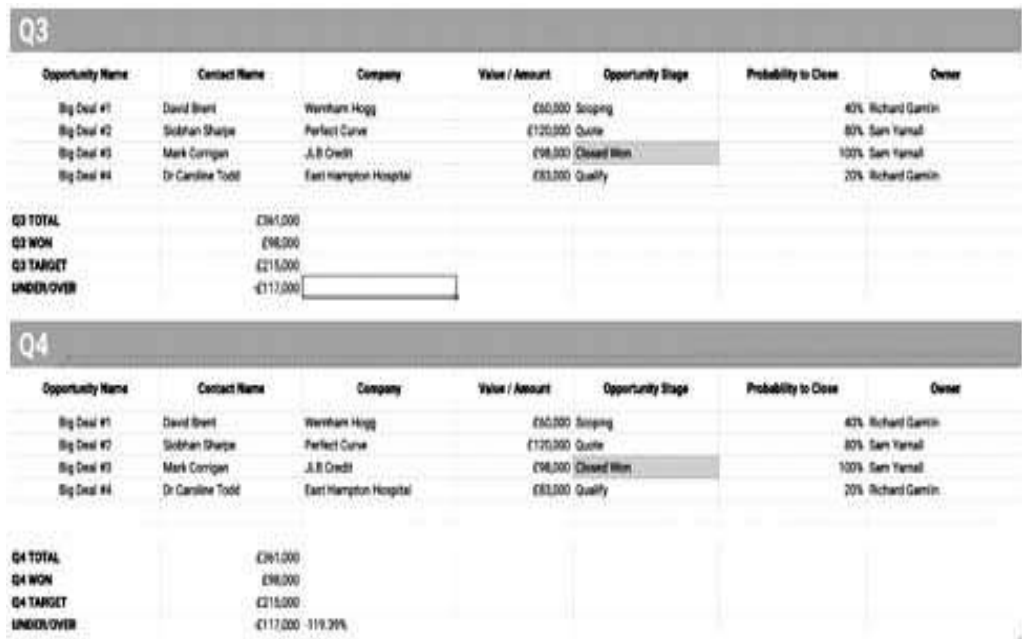


Fig. 10.2 : Use of Advanced Excel Functions in education and industry applications



Activity 10.2.

- 1. Create a small student marksheet with names and marks.
- 2. Use the IF function to display Pass or Fail.
- 3. Use COUNTIF to count the number of students who passed.
- 4. Create a simple lookup table for grades and apply VLOOKUP.
- 5. Observe how these functions reduce manual calculation.

Objective : To understand the practical use of advanced functions in real-life situations.



Check Your Progress 10.2.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

- 1. Name one use of advanced Excel functions in education.
.....
.....
.....

2. Which function is used to retrieve related data from a table?

.....

3. How do advanced functions help industries?

.....

10.5. SUMMARY

Learners This unit introduced Advanced Functions in Excel, which help users perform complex tasks such as decision-making, data searching, conditional counting, and text management. Learners explored logical functions like IF for making decisions, conditional functions like COUNTIF for counting based on criteria, and lookup functions such as VLOOKUP, HLOOKUP, and MATCH for retrieving related information from tables. Text functions like CONCAT, TEXT, and TRIM were discussed to clean, format, and combine text data. The unit also highlighted the importance and scope of advanced functions in education and industry, showing how they support real-life applications such as marksheet preparation, payroll processing, sales analysis, and data management. Overall, advanced functions.

10.6. GLOSSARY

- **Advanced Functions** – Excel functions that perform complex tasks such as decision-making, searching data, conditional counting, and text handling.
- **IF Function** – A logical function that checks a condition and returns one result if the condition is true and another if it is false.
- **COUNTIF** – A conditional function that counts the number of cells that meet a specific condition.
- **VLOOKUP** – A lookup function that searches for a value in the first column of a table and returns a related value from another column.
- **HLOOKUP** – A lookup function that searches for a value in the first row of a table and returns a related value from another row.
- **MATCH** – A function that returns the position of a value in a range of cells.
- **CONCAT** – A text function used to join text from two or more cells into one cell.

NOTES

- **TEXT Function** – A function used to format numbers or dates as text in a specified format.
- **TRIM** – A text function that removes extra spaces from text, leaving only single spaces between words.

10.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 10.1

1. **Answer** : IF checks a condition and returns different results for true or false values.
2. **Answer** : These functions retrieve related information from tables.
3. **Answer** : COUNTIF counts cells that satisfy a given condition.
4. **Answer** : TRIM cleans imported or copied data by deleting unnecessary spaces.

Check Your Progress 10.2

1. **Answer** : Preparing marksheets, grading students, or analyzing attendance. Advanced functions automate academic record management.
2. **Answer** : VLOOKUP (or HLOOKUP). Lookup functions retrieve related information from tables.
3. **Answer** : They reduce manual work, improve accuracy, and support data analysis. Advanced functions help industries manage large datasets efficiently and make informed decisions.

10.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3734	

10.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

10.10 EXERCISE

Part 1

A. Multiple Choice Questions

1. Which function is used to make decisions in Excel?
 - (a) SUM
 - (b) IF
 - (c) COUNT
 - (d) AVERAGE
2. Which function is used to count cells based on a condition?
 - (a) COUNT
 - (b) COUNTIF
 - (c) SUM
 - (d) MAX
3. VLOOKUP searches data in which direction?
 - (a) Horizontally
 - (b) Diagonally
 - (c) Vertically
 - (d) Randomly
4. Which function is used to remove extra spaces from text?
 - (a) CONCAT
 - (b) TEXT
 - (c) TRIM
 - (d) MATCH
5. MATCH function returns:
 - (a) The value searched
 - (b) The sum of values
 - (c) The position of a value
 - (d) The average of values

Answer with Explanation :

1. **(b) IF**

Explanation : The IF function checks a condition and gives different results based on whether the condition is true or false. It is used for decision-making tasks such as Pass/Fail or Yes/No.

NOTES

2. (b) COUNTIF

Explanation : COUNTIF counts only those cells that satisfy a given condition, such as counting the number of students who passed or the number of sales above a target.

3. (c) Vertically

Explanation : VLOOKUP searches for a value in the first column of a table and moves vertically downwards to find matching data.

4. (c) TRIM

Explanation: The TRIM function removes unwanted extra spaces from text, leaving only a single space between words. It is useful when cleaning imported data.

5. (c) The position of a value

Explanation : MATCH does not return the value itself. Instead, it gives the position of the value within a specified range.

B. Small Answer Type Questions

1. What is the IF function?
2. What is the VLOOKUP function?
3. What is the COUNTIF function?
4. What is the purpose of the IFERROR function?

Part 2**2. Long Answer Type Questions (200 Words Each)**

1. Explain logical and conditional functions in Excel with suitable examples.
2. Describe lookup functions in Excel and explain their practical applications.

Part - 3**3. Long Answer Type Questions (300 Words Each)**

1. Discuss the importance of advanced functions in Excel. Explain how logical, lookup, and text functions help in real-life data management.
2. Explain how advanced Excel functions are used in education and industry. Give examples such as marksheet preparation, payroll processing, and data analysis.

UNIT – 11

DATA ORGANIZATION AND PREPARATION UNIT STRUCTURE

NOTES

UNIT STRUCTURE

- 11.1 Introduction
- 11.2 Objective
- 11.3 Overview of Data Organization and Preparation
- 11.4 Scope of Data Organization in Education and Industry
- 11.5 Summary
- 11.6 Glossary
- 11.7 Answer to Check Your Progress
- 11.8 Suggested Readings – OER
- 11.9 Reference
- 11.10 Exercise

11.1. INTRODUCTION

In the previous unit, you learned how to use advanced Excel functions such as IF, VLOOKUP, COUNTIF, and text functions to analyze and process data. These functions help perform calculations and retrieve information. However, before applying such functions, it is very important that data is properly organized and prepared. Poorly arranged or unclear data can lead to incorrect results and confusion.

This unit introduces the concept of **Data Organization and Preparation** in Excel. It explains how raw data can be arranged, cleaned, and structured using tools like sorting, filtering, text to columns, and data validation. These techniques help transform messy data into a well-organized format that is easy to understand and analyze.

While studying this unit, try to relate the concepts to real-life data such as student records, survey responses, sales data, or attendance sheets. Practicing these tools in Excel will help you understand how organized data improves accuracy, saves time, and supports better decision-making.

NOTES

11.2. OBJECTIVE

After studying this unit, you will be able to:

- Understand the concept of data organization and preparation.
- Use Excel tools to organize and clean data
- Apply sorting and filtering to arrange data meaningfully
- Split data using Text to Columns
- Use Data Validation to control data entry
- Prepare data accurately for further analysis

11.3. OVERVIEW OF DATA ORGANIZATION AND PREPARATION

Data organization and preparation refer to the process of arranging, cleaning, and structuring data so that it can be easily analyzed. In Excel, data often comes from different sources and may contain errors, extra spaces, or unwanted formats. Organizing data helps remove these issues and makes the worksheet more readable.

Well-organized data ensures that calculations, formulas, and charts give correct results. For example, sorting helps arrange marks in order, filtering helps view specific records, and text tools help separate combined information. Data preparation is an essential step before analysis.

11.3.1. About Data Organization Techniques in Excel

Excel provides several built-in tools to organize data efficiently. These tools allow users to rearrange records, remove unnecessary information, and standardize data formats. Some common data organization techniques include sorting data in ascending or descending order, filtering records based on conditions, splitting text into columns, and validating data entry.

Using these techniques improves data quality and reduces errors. They are widely used in academic records, business reports, surveys, and databases.

11.3.1.1. Key Features of Data Organization Tools

(Sorting, Filtering, Text to Columns, Data Validation)

- **Sorting** – Arranges data alphabetically or numerically (e.g., sorting marks from highest to lowest).
- **Filtering** – Displays only selected records based on criteria (e.g., showing only passed students).
- **Text to Columns** – Splits combined data into separate columns (e.g., separating first name and last name).

- **Data Validation** – Restricts data entry to ensure accuracy (e.g., allowing only numbers or dates).

These tools help maintain consistency, accuracy, and clarity in worksheets.

11.3.2. Importance of Data Preparation for Analysis

Data preparation is essential for accurate data analysis. Clean and well-organized data ensures that formulas, functions, and charts work correctly. Without proper preparation, results may be incorrect or misleading.

In education, data preparation helps generate accurate results and attendance reports. In industry, it supports sales analysis, inventory tracking, and financial reporting. Thus, preparing data correctly is a crucial step before applying any analysis or decision-making tools in Excel.

	A	B		D	E
1	Item	Qty.		Item	Qty.
2	Apples	38		Peaches	25
3	Cherries	29		Cherries	29
4	Grapes	31		Grapes	31
5	Lemons	34		Lemons	34
6	Oranges	36		Oranges	36
7	Peaches	25		Apples	38
8	Pears	40		Pears	40

Sorted ascending

Fig. 11.1 : Data organization tools in Excel.



Activity 11.1.

Open Microsoft Excel on your computer.

1. Enter student names, marks, and subjects in a worksheet.
2. Use **Sorting** to arrange marks from highest to lowest.
3. Apply **Filtering** to show only students who scored above 60.
4. Enter full names in one column and use **Text to Columns** to split first and last names.
5. Apply **Data Validation** to allow marks only between 0 and 100.

Objective : To practice data organization and preparation tools in Excel.

NOTES

NOTES

☒ **Check Your Progress 11.1.**

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

1. What is the purpose of data organization in Excel?

2. Which tool is used to arrange data in ascending or descending order?

3. Which Excel feature displays only selected records based on criteria?

4. Which tool is used to split combined text into separate columns?

5. Why is data validation important?

11.4. SCOPE OF DATA ORGANIZATION IN EDUCATION AND INDUSTRY

Data organization plays a very important role in both education and industry because large amounts of data are generated every day. Properly organized data makes it easier to understand information, perform calculations, and make correct decisions.

In the **education sector**, data organization is used to manage student records, marksheets, attendance, examination results, and feedback forms. Teachers and administrators use sorting to arrange marks, filtering to view specific students, and data validation to avoid incorrect entries. Well-organized data helps institutions maintain accuracy and transparency.

11.4.1. ROLE OF DATA PREPARATION IN MODERN COMPUTING

In modern workplaces, prepared data supports technologies such as data analytics, dashboards, and decision-support systems. Clean data leads to accurate outputs and meaningful insights. Learning data preparation skills helps students and professionals work confidently with digital tools and prepares them for data-driven careers.



Activity 11.2.

1. Create a small worksheet showing student marks or sales data.
2. Sort the data in ascending or descending order.

NOTES

- 3. Apply a filter to display selected records only.
- 4. Discuss how organized data helps in understanding results faster.

Objective : To understand the importance of data organization in real-life situations.

☒ **Check Your Progress 11.2.**

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

- 1. Mention one use of data organization in education.
.....
.....
.....
- 2. Name one area in industry where data organization is important.
.....
.....
.....
- 3. Why is data preparation important in modern computing?
.....
.....
.....

11.5. SUMMARY

This unit explained the importance of **data organization and preparation** in Excel. Learners studied how tools such as sorting, filtering, text to columns, and data validation help arrange and clean data effectively. The unit highlighted how organized data improves accuracy and makes analysis easier. It also discussed the wide scope of data organization in education and industry, showing how prepared data supports reports, decision-making, and modern computing systems. Overall, the unit emphasized that proper data preparation is an essential step before applying formulas, functions, or data analysis in Excel.

11.6. GLOSSARY

- **Data Organization** – The process of arranging data in a structured and systematic manner so that it is easy to read, understand, and analyze.

- **Data Preparation** – The process of cleaning, formatting, and validating data before analysis or reporting.
- **Sorting** – An Excel feature used to arrange data in ascending or descending order based on numbers, text, or dates.
- **Filtering** – A tool used to display only selected data that meets specific criteria while hiding the rest.
- **Text to Columns** – An Excel feature that splits combined text into separate columns based on a delimiter such as space or comma.
- **Data Validation** – A feature that restricts the type of data entered into a cell to ensure accuracy and consistency.
- **Raw Data** – Unprocessed data collected from different sources that may contain errors or inconsistencies.
- **Clean Data** – Data that has been organized, corrected, and prepared for analysis.

11.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 11.1.

1. **Answer :** To arrange and clean data so that it becomes easy to understand and analyze. Organized data improves accuracy and readability.
2. **Answer :** Sorting arranges data alphabetically or numerically.
3. **Answer :** Filtering shows only records that meet specific conditions.
4. **Answer :** This tool separates combined text into different columns.
5. **Answer :** It controls data entry and prevents incorrect values. Data validation ensures accuracy and consistency in worksheets.

Check Your Progress 11.2.

1. **Answer :** Managing marksheets, attendance records, or student databases. Organized data helps educational institutions maintain accurate records.
2. **Answer :** Sales analysis, payroll management, or inventory control.

Industry uses organized data for smooth operations and decision-making.
3. **Answer :** Because clean and structured data ensures accurate analysis and reliable results. Modern computing systems depend on prepared data to function correctly.

NOTES

11.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3735	

11.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

11.10. EXERCISE**Part 1****A. Multiple Choice Questions**

- Which Excel feature is used to arrange data in ascending or descending order?
 - Filtering
 - Sorting
 - Data Validation
 - Text to Columns
- Which tool is used to display only selected records from a dataset?
 - Sorting
 - Filtering
 - CONCAT

- (d) TRIM
3. Text to Columns is mainly used to:
 - (a) Join text
 - (b) Remove spaces
 - (c) Split combined text
 - (d) Count values
 4. Which feature restricts incorrect data entry in a worksheet?
 - (a) Sorting
 - (b) Filtering
 - (c) Data Validation
 - (d) AutoFill
 5. Proper data preparation helps to:
 - (a) Increase file size
 - (b) Reduce accuracy
 - (c) Ensure correct analysis
 - (d) Hide data

NOTES

Answers with Explanations :

1. (b) Sorting

Explanation : Sorting arranges data in a specific order such as lowest to highest marks or A–Z names, making data easy to analyze.

2. (b) Filtering

Explanation : Filtering displays only those records that meet given criteria while hiding the remaining data.

3. (c) Split combined text

Explanation : Text to Columns separates combined data (like full names or comma-separated values) into different columns.

4. (c) Data Validation

Explanation : Data Validation controls the type of data entered into a cell, such as allowing only numbers within a range.

5. (c) Ensure correct analysis

Explanation : Clean and well-organized data ensures that formulas, functions, and reports give accurate results.

B. Small Answer Type Questions

1. What is data sorting?
2. What is data filtering?
3. What is data validation?
4. Why is data cleaning important?

NOTES

Part 2

C. Long Answer Type Questions (200 Words Each)

1. Explain data organization tools in Excel such as sorting, filtering, text to columns, and data validation.
2. Describe the importance of data preparation before applying formulas and functions in Excel.

Part 3

D. Long Answer Type Questions (300 Words Each)

1. Discuss the role of data organization and preparation in education and industry with suitable examples.
2. Explain how data preparation supports modern computing and data-driven decision-making.



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DR. C. V. RAMAN UNIVERSITY (C.G.)

SLM FEEDBACK FORM

PROGRAMME : _____

COURSE : _____

BLOCK : _____

UNIT : _____

Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill up and send us the following questionnaire, which pertains to this block. If you find the space provided insufficient, kindly use a separate sheet.

Please mail to aisectcontent@aisect.org/ for online submission please scan QR code:

Questionnaire

1. Name : _____

2. Enrolment No. :

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3. How many hours did you need for studying the units? :

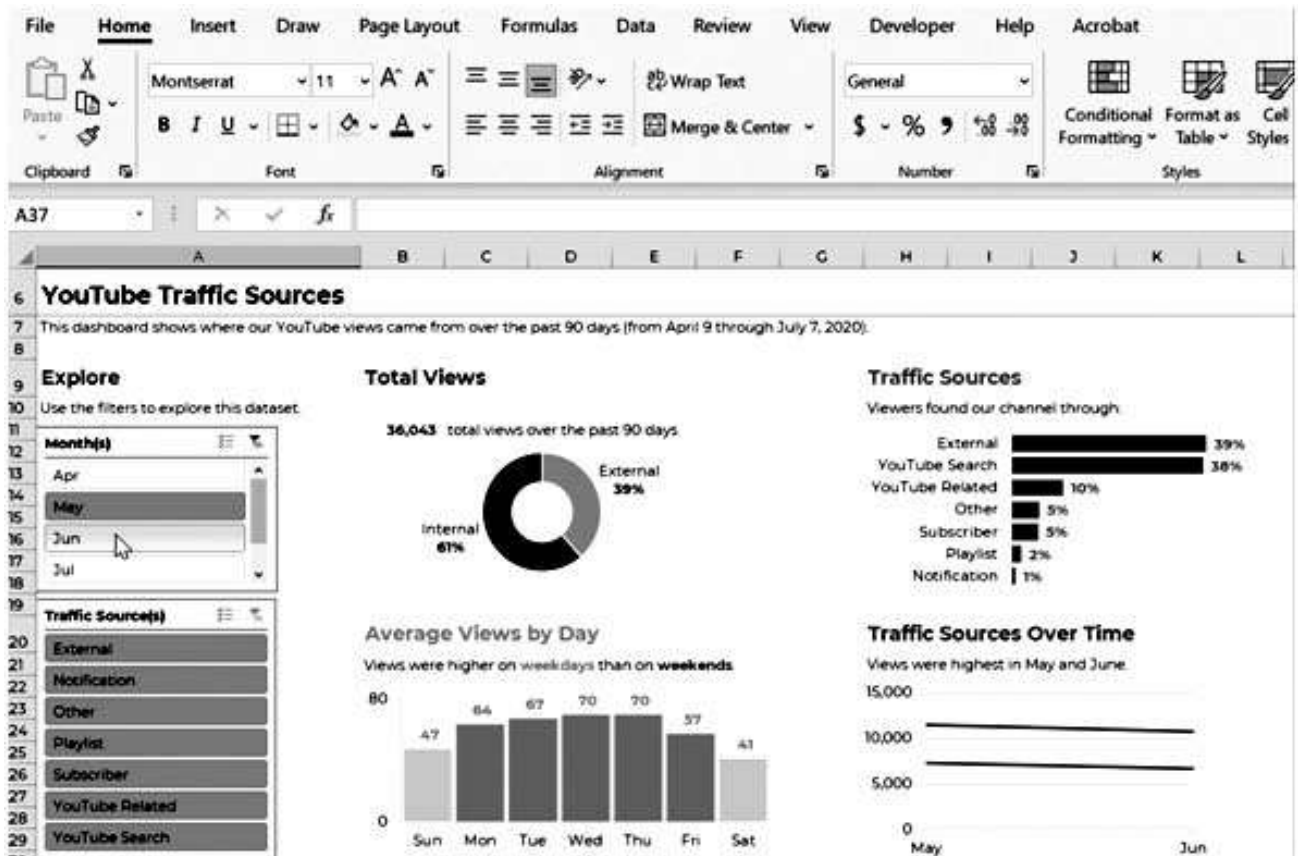
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4. Please give your reactions to the following items based on your reading of the block:

Items	Excellent	Very Good	Good	Poor	Give specific Examples (If poor)
Presentation Quality					
Language and Style					
Illustrations					
Used (diagrams, tables, etc.)					
Conceptual Clarity					
Check Your Progress Questions					
Suggested Readings - OER					

5. Any other comments:

Block IV	SPREADSHEET CHARTS AND PIVOT TABLES	105 – 134
Unit 12	Creating and Customizing Charts	107
Unit 13	Introduction to Pivot Tables	115
Unit 14	Advanced Pivot Tables and Pivot Charts	123



Block IV focuses on **visualizing and analyzing data effectively using Excel Charts and Pivot Tables**. The block begins with **Creating and Customizing Charts**, where learners understand how data can be presented visually through different chart types and how charts can be formatted for clarity and impact. It then introduces **Pivot Tables**, helping learners summarize large datasets quickly by organizing data into meaningful rows, columns, and values. Finally, the block covers **Advanced Pivot Tables and Pivot Charts**, enabling learners to analyze data dynamically, apply filters, add subtotals, and create interactive visual reports. Together, these units help learners convert raw data into clear insights, improve data interpretation skills, and support informed decision-making in academic, professional, and real-world contexts.

UNIT – 12

CREATING AND CUSTOMIZING CHARTS

NOTES

UNIT STRUCTURE

- 12.1 Introduction
- 12.2 Objective
- 12.3 Overview of Charts in Excel
- 12.4 Scope of Charts in Education and Industry
- 12.5 Summary
- 12.6 Glossary
- 12.7 Answer to Check Your Progress
- 12.8 Suggested Readings – OER
- 12.9 Reference
- 12.10 Exercise

12.1. INTRODUCTION

In the previous unit, you learned how to organize and prepare data using tools such as sorting, filtering, text to columns, and data validation. Well-organized data is essential for accurate analysis. Once data is properly prepared, the next important step is to **present it in a visual form** so that patterns, trends, and comparisons can be understood easily.

This unit introduces **Charts in Excel**, which help represent numerical data graphically. Charts convert rows and columns of data into visual formats such as bar charts, line charts, and pie charts. These visual representations make data more meaningful, easier to interpret, and quicker to understand than raw numbers.

While studying this unit, try to relate charts to real-life situations such as showing student performance, sales growth, or monthly expenses. Creating and customizing charts in Excel will help you communicate information clearly and support better decision-making.

12.2. OBJECTIVE

After studying this unit, you will be able to:

- Understand the concept and purpose of charts in Excel
- Identify different types of charts available in Excel

NOTES

- Create charts using given data
- Customize charts to improve clarity and presentation
- Use charts to compare, analyze, and interpret data
- Apply charts effectively in academic and professional work

12.3. OVERVIEW OF CHARTS IN EXCEL

A **chart** is a graphical representation of data. Instead of viewing data only in rows and columns, charts display information visually using bars, lines, or slices. Charts help users quickly identify trends, comparisons, and patterns in data.

Excel provides several chart types to suit different kinds of data. Choosing the correct chart type is important for clear data presentation. Charts are widely used in reports, presentations, dashboards, and analysis tasks.

12.3.1. About About Charts and Their Purpose in Excel

Charts are used to simplify complex data and make it easier to understand. They help answer questions such as:

- Which value is highest or lowest?
- How does data change over time?
- How do different categories compare?

Charts improve communication by presenting data visually instead of using long tables of numbers.

12.3.1.1. Key Features and Types of Charts

Excel provides various chart types, each suited for specific purposes:

- **Column Chart** – Compares values across categories
- **Bar Chart** – Similar to column chart but horizontal
- **Line Chart** – Shows trends over time
- **Pie Chart** – Shows parts of a whole
- **Area Chart** – Displays trends with filled areas
- **Scatter Chart** – Shows relationship between two variables

Selecting the correct chart type improves understanding and presentation.

12.3.2. Importance of Charts for Data Visualization

Charts play an important role in data visualization by presenting information in a clear and attractive manner. They help users understand large datasets quickly and identify key insights at a glance.

In education, charts help teachers explain results and performance. In industry, charts support business analysis, financial reporting, and decision-making. Effective charts improve communication and make data-driven conclusions easier.

NOTES

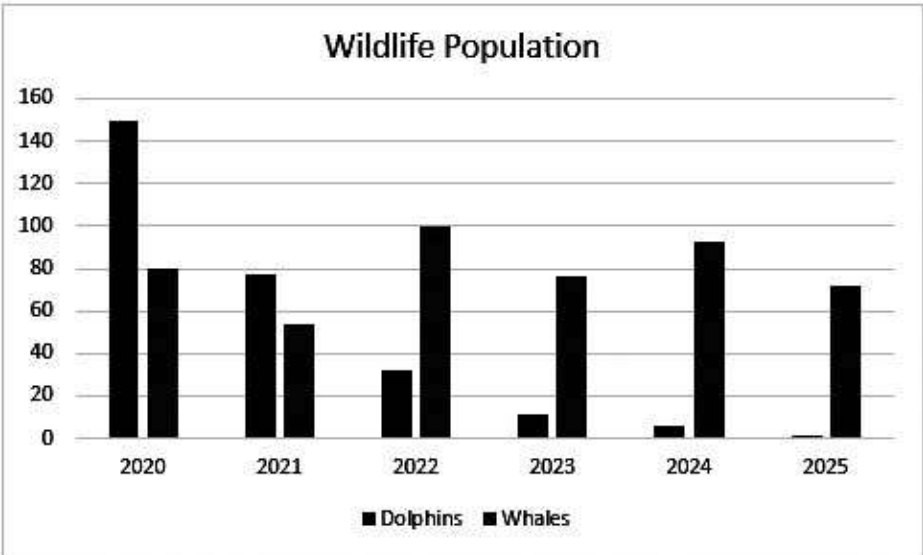


Fig. 12.1 : Common chart types used in Excel.



Activity 12.1.

Open Microsoft Excel on your computer.

1. Enter monthly sales data in a worksheet.
2. Create a column chart to compare sales.
3. Create a line chart to observe sales trends.
4. Identify which chart gives better clarity and explain why.

Objective : To understand the use of charts in Excel.



Check Your Progress 12.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is a chart in Excel?

.....

.....

.....

2. Which chart is best for showing trends over time?

.....

.....

.....

3. Name any two types of charts in Excel.

.....

.....

.....

12.4. SCOPE OF CHARTS IN EDUCATION AND INDUSTRY

Charts have a wide scope in both education and industry because they help present data in a visual and easily understandable form. In many situations, numbers alone may not clearly convey information. Charts convert numerical data into visual patterns, making comparison, trends, and relationships easy to identify.

In the **education sector**, charts are widely used to represent student performance, examination results, attendance records, and survey responses. Teachers use bar or column charts to compare marks of students across subjects, line charts to track performance over time, and pie charts to show percentage distribution of grades. Charts help students understand data concepts visually and make learning more engaging and effective.

In the **industry sector**, charts play a crucial role in business analysis and reporting. Organizations use charts to analyze sales growth, monitor profits and losses, track monthly expenses, and compare performance across regions or departments. Managers and decision-makers rely on charts to understand business trends quickly and take timely decisions. Charts are also commonly used in presentations and reports to communicate insights clearly to stakeholders.

Thus, the scope of charts extends across academics, business, research, and administration, making them an essential tool for data interpretation and communication.

12.4.1. Role of Charts in Data Analysis and Decision Making

Charts play an important role in data analysis and decision-making by transforming raw data into meaningful visual information. They help users identify trends, patterns, and variations that may not be easily visible in tables of numbers. For example, a line chart can instantly show whether sales are increasing or decreasing over time.

In data analysis, charts support comparison between different datasets, highlight outliers, and reveal relationships between variables. This helps users analyze performance, detect problems, and evaluate outcomes effectively. Charts also reduce the time required to understand large datasets, as visual information is processed faster than numerical data.

In decision-making, charts provide clear evidence that supports logical conclusions. Business leaders use charts to decide future strategies, educators use them to improve teaching methods, and administrators use them for planning and evaluation. Well-designed charts improve clarity, reduce misinterpretation, and support data-driven decisions.

Overall, charts are a powerful tool that bridge the gap between data and decision-making by presenting information in a clear, visual, and actionable form.

NOTES

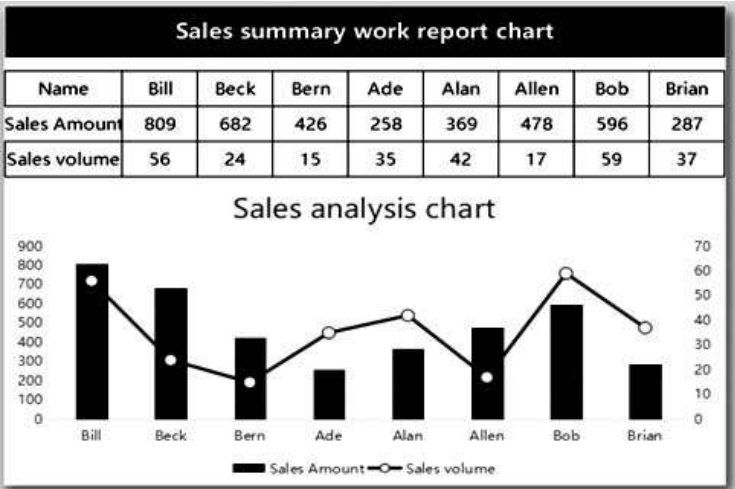


Fig. 12.2 : Use of charts in Education and Industry.



Activity 12.2.

1. Create a worksheet showing marks of five students in three subjects.
2. Use a column chart to compare subject-wise performance.
3. Create a pie chart to show percentage distribution of total marks.
4. Discuss which chart is more useful for comparison and why.

Objective : To understand the scope of charts in education and industry.



Check Your Progress 12.2.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

1. Mention one use of charts in education.
.....
.....
.....
2. Name one area in industry where charts are commonly used.
.....
.....
.....
3. Why are charts preferred over tables in many situations?
.....
.....
.....

NOTES

12.5. SUMMARY

This unit explained the concept of **creating and customizing charts in Excel**. Learners studied how charts convert numerical data into visual form, making it easier to understand comparisons, trends, and patterns. The unit discussed different chart types such as column, bar, line, and pie charts, and highlighted their importance in data visualization. It also explained the wide scope of charts in education and industry, showing how they support analysis, reporting, and decision-making. Overall, the unit emphasized that charts are powerful tools for presenting data clearly and effectively.

12.6. GLOSSARY

- **Chart** – A graphical representation of data using bars, lines, or shapes to make information easy to understand.
- **Data Visualization** – The process of presenting data in visual form to identify patterns and trends.
- **Column Chart** – A chart that uses vertical bars to compare values across categories.
- **Bar Chart** – A chart that uses horizontal bars to compare data.
- **Line Chart** – A chart used to show changes or trends over a period of time.
- **Pie Chart** – A circular chart that shows parts of a whole in percentages.
- **Axis** – The horizontal or vertical line in a chart that displays values or categories.
- **Legend** – A chart element that explains the meaning of colors or symbols used in a chart.

12.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 12.1

1. **Answer** : A chart is a graphical representation of data.
2. **Answer** : Line chart.
3. **Answer** : Column chart and Pie chart.

Check Your Progress 12.2

1. **Answer** : To represent student marks, attendance, or performance visually. Charts make academic data easy to understand.
2. **Answer** : Sales analysis, financial reporting, or business performance tracking. Industry uses charts to analyze and present business data.
3. **Answer** : Because charts present data visually and are easier to understand quickly. Visual information is processed faster than numbers.

12.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3736	

12.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
- National Programme on Technology Enhanced Learning (NPTEL). (2022). Spreadsheet applications and data handling. IIT Consortium.
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- Harvey, G. (2020). Excel for dummies (7th ed.). Wiley.
- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

12.10. EXERCISE

Part 1

A. Multiple Choice Questions

- Which chart is best suited to compare values across different categories?
 - Pie Chart
 - Line Chart
 - Column Chart
 - Scatter Chart
- Which chart is mainly used to show trends over time?
 - Bar Chart
 - Line Chart
 - Pie Chart
 - Area Chart
- Pie charts are used to represent:
 - Trends
 - Comparisons
 - Relationships
 - Parts of a whole
- Which Excel element explains the colors or symbols used in a chart?

NOTES

(a) Axis

(b) Title

(c) Legend

(d) Gridlines

5. Charts are mainly used to:

(a) Enter data

(b) Store data

(c) Visually represent data

(d) Delete data

Answers with Explanations :**1. (c) Column Chart**

Explanation : Column charts use vertical bars to compare values across categories such as students, products, or months, making comparisons easy.

2. (b) Line Chart

Explanation : Line charts show how data changes over a period of time, such as monthly sales or yearly growth.

3. (d) Parts of a whole

Explanation : Pie charts show how a total value is divided into different parts or percentages.

4. (c) Legend

Explanation : The legend helps identify what each color or symbol in the chart represents.

5. (c) Visually represent data

Explanation : Charts convert numerical data into visual form, making it easier to understand, compare, and analyze.

B. Small Answer Type Questions

1. What is an Excel chart?
2. What is a column chart?
3. What is a pie chart?
4. Why are charts used in Excel?

Part 2**C. Long Answer Type Questions (200 Words Each)**

1. Explain different types of charts available in Excel and their uses.
2. Describe the importance of charts in education and industry.

Part 3**D. Long Answer Type Questions (300 Words Each)**

1. Discuss the role of charts in data visualization and decision-making with suitable examples.
2. Explain the steps involved in creating and customizing charts in Excel.

UNIT – 13

INTRODUCTION TO PIVOT TABLES

NOTES

UNIT STRUCTURE

- 13.1 Introduction
- 13.2 Objective
- 13.3 Overview of Pivot Tables
- 13.4 Scope of Pivot Tables in Education and Industry
- 13.5 Summary
- 13.6 Glossary
- 13.7 Answer to Check Your Progress
- 13.8 Suggested Readings – OER
- 13.9 Reference
- 13.10 Exercise

13.1. INTRODUCTION

In the previous unit, you learned how to present data visually using charts. Charts help in understanding comparisons and trends quickly. However, when data becomes large and complex, it becomes difficult to analyze information using charts alone. To handle such large datasets efficiently, Excel provides a powerful tool called the Pivot Table.

This unit introduces **Pivot Tables**, which help summarize, organize, and analyze large amounts of data easily. Pivot Tables allow users to rearrange data dynamically and perform calculations such as totals, counts, and averages without writing complex formulas. They transform raw data into meaningful information.

While studying this unit, try to relate Pivot Tables to real-life examples such as analyzing student marks, attendance records, sales data, or survey results. Learning Pivot Tables will help you save time, reduce errors, and make informed decisions based on data.

13.2. OBJECTIVE

After studying this unit, you will be able to:

- Understand the concept of Pivot Tables
- Identify the components of a Pivot Table
- Create a basic Pivot Table in Excel
- Summarize data using rows, columns, values, and filters

NOTES

- Analyze large datasets efficiently
- Apply Pivot Tables in education and industryApply charts

13.3. OVERVIEW OF PIVOT TABLES

A Pivot Table is a powerful Excel tool used to summarize, analyze, and reorganize large datasets quickly. Instead of reading thousands of rows, a Pivot Table presents data in a compact, meaningful format by grouping and calculating values. Users can change the view simply by dragging fields, without altering the original data.

Pivot Tables are especially useful when working with large datasets such as sales records, student data, attendance sheets, or survey results. They help save time, reduce manual errors, and provide instant insights.

13.3.1. About Pivot Tables and Their Purpose

The main purpose of a Pivot Table is to make data analysis easy and flexible. It allows users to:

- Group data by categories (e.g., subject, region, month)
- Perform calculations like sum, count, and average
- Compare values across different dimensions

For example, a Pivot Table can quickly show total sales by product or average marks by subject, which would otherwise require many formulas.

13.3.1.1. Key Components of a Pivot Table(Rows, Columns, Values, Filters)

- **Rows Area** – Displays categories or labels (e.g., student names, products)
- **Columns Area** – Shows data categories across columns (e.g., months, grades)
- **Values Area** – Performs calculations such as Sum, Count, or Average
- **Filters Area** – Allows filtering data to focus on specific information

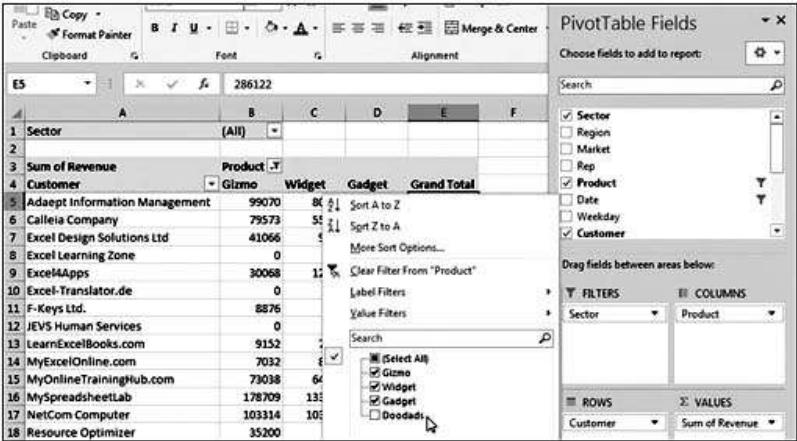


Fig. 13.1 : Components and layout of a Pivot Table in Excel

13.3.2. Importance of Pivot Tables for Data Analysis

Pivot Tables are important because they simplify complex data analysis. They help users identify trends, compare categories, and summarize data efficiently. Pivot Tables update automatically when fields are rearranged, making them highly flexible.

In education, Pivot Tables help analyze results, attendance, and performance patterns. In industry, they support sales analysis, financial reporting, inventory tracking, and decision-making. Overall, Pivot Tables make data analysis faster, easier, and more accurate.

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Activity 13.1.

Open Microsoft Excel on your computer.

1. Enter sample data (student marks or sales data) in Excel.
2. Select the data and insert a Pivot Table.
3. Drag one field to the Rows area and another to the Values area.
4. Change the layout and observe how the summary updates instantly.

Objective : To understand the basic working of a Pivot Table.



Check Your Progress 13.1.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is a Pivot Table?

.....

2. Name any two components of a Pivot Table.

.....

3. Why are Pivot Tables useful for large datasets?

.....

13.4. SCOPE OF PIVOT TABLES IN EDUCATION AND INDUSTRY

Pivot Tables have a wide scope in both education and industry because they help handle large amounts of data easily. In educational

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institutions, Pivot Tables are used to analyze student marks, attendance records, examination results, and feedback data. Teachers and administrators can quickly find averages, totals, and performance comparisons without using complex formulas.

In industry, Pivot Tables are widely used for sales analysis, payroll summaries, inventory control, and financial reporting. For example, a company can use a Pivot Table to find total sales by region, product-wise performance, or monthly revenue trends. Pivot Tables save time, reduce manual effort, and improve accuracy. Their flexibility makes them an essential tool for data analysis in real-life situations.

13.4.1. Role of Pivot Tables in Decision Making

Pivot Tables play a crucial role in decision making by presenting summarized data in a clear and meaningful way. Decision-makers often need quick insights from large datasets, and Pivot Tables provide this by grouping and calculating data instantly.

In education, Pivot Tables help school management identify weak subjects, track student progress, and plan academic improvements. In industry, managers use Pivot Tables to analyze sales performance, identify profitable products, and control expenses. Because Pivot Tables allow data to be viewed from different angles, they support informed, data-driven decisions. This makes them valuable tools in modern computing and professional work environments.

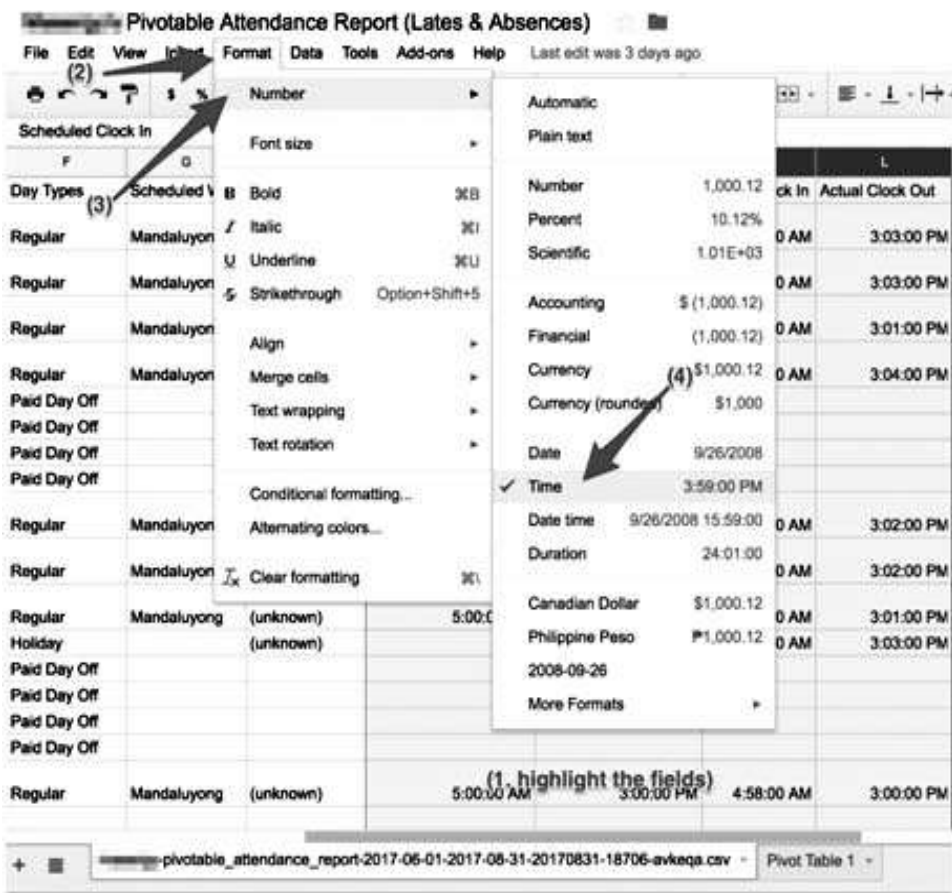


Fig. 13.2 : Use of Pivot tables in Education and Industry



Activity 13.2.

1. Create a worksheet with student marks or sales data.
2. Insert a Pivot Table using the dataset.
3. Summarize data by category (subject, product, or region).
4. Change the layout and observe how results update instantly.
5. Discuss how the summary helps in decision-making.

Objective : To understand the scope and usefulness of Pivot Tables.

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Check Your Progress 13.2.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

1. Mention one use of Pivot Tables in education.
.....
.....
.....
2. Name one industry application of Pivot Tables.
.....
.....
.....
3. Why are Pivot Tables useful for decision making?
.....
.....
.....

13.5. SUMMARY

This unit introduced Pivot Tables as a powerful tool for summarizing and analyzing large datasets in Excel. Learners understood the concept and purpose of Pivot Tables and studied their key components such as rows, columns, values, and filters. The unit explained how Pivot Tables help organize data, perform calculations, and present information from different perspectives. It also highlighted the wide scope of Pivot Tables in education and industry and their important role in data analysis and decision-making. Overall, the unit emphasized that Pivot Tables simplify complex data and support quick, accurate, and informed decisions.

13.6. GLOSSARY

- **Pivot Table** – An Excel tool used to summarize, analyze, and reorganize large datasets easily.
- **Rows Area** – The section of a Pivot Table that displays categories or labels.

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- **Columns Area** – The section that displays data categories across columns.
- **Values Area** – The area where calculations such as sum, count, or average are shown.
- **Filters Area** – Allows users to filter data and focus on specific information.
- **Data Analysis** – The process of examining data to draw conclusions or insights.
- **Summarization** – The process of reducing large data into meaningful totals or averages.

13.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 13.1

1. **Answer** : A Pivot Table is a tool used to summarize and analyze large datasets in Excel. It converts raw data into meaningful summaries.
2. **Answer** : Rows area and Values area. These areas define categories and calculations.
3. **Answer** : They summarize large data quickly and reduce manual work. Pivot Tables provide instant analysis without complex formulas.

Check Your Progress 13.2

1. **Answer** : Analyzing student marks, attendance, or examination results. Pivot Tables help summarize academic data quickly.
2. **Answer** : Sales analysis, payroll summary, or inventory management. Industry uses Pivot Tables to analyze large datasets efficiently.
3. **Answer** : They provide quick summaries and insights from large data. Clear summaries help decision-makers take informed actions.

13.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectionline.com/User/UnitUrls?unitId=3737	

13.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
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- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

13.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. Pivot Tables are mainly used to:
(a) Enter data
(b) Format text
(c) Summarize and analyze data
(d) Delete data
2. Which area of a Pivot Table performs calculations?
(a) Rows
(b) Columns
(c) Values
(d) Filters
3. Pivot Tables are best suited for:
(a) Small text documents
(b) Large datasets
(c) Images
(d) Drawings
4. Which option allows viewing specific data in a Pivot Table?
(a) Rows
(b) Columns
(c) Values
(d) Filters
5. Pivot Tables help in:
(a) Increasing data size
(b) Manual calculation
(c) Quick decision-making
(d) Data duplication

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Answers with Explanations**1. (c) Summarize and analyze data**

Explanation: Pivot Tables convert large data into meaningful summaries.

2. (c) Values

Explanation : The Values area performs calculations like sum or average.

3. (b) Large datasets

Explanation : Pivot Tables are designed to handle large amounts of data.

4. (d) Filters

Explanation : Filters allow viewing selected data only.

5. (c) Quick decision-making

Explanation : Summarized data supports faster and better decisions.

B. Small Answer Type Questions

1. What is a Pivot Table?
2. Why are Pivot Tables used?
3. What is a Pivot Field?
4. How does a Pivot Table summarize data?

Part 2**C. Long Answer Type Questions (200 Words Each)**

1. Explain the concept and components of a Pivot Table in Excel.
2. Describe the use of Pivot Tables in education and industry with examples.

Part 3**D. Long Answer Type Questions (300 Words Each)**

1. Discuss the role of Pivot Tables in data analysis and decision-making.
2. Explain the steps to create and modify a Pivot Table using sample data.

UNIT – 14

SEARCHING AND HASHING TECHNIQUES

NOTES

UNIT STRUCTURE

- 14.1 Introduction
- 14.2 Objective
- 14.3 Advanced Pivot Table Features
- 14.4 Pivot Charts
- 14.5 Summary
- 14.6 Glossary
- 14.7 Answer to Check Your Progress
- 14.9 Suggested Readings – OER
- 14.10 Exercise

14.1. INTRODUCTION

In the previous unit, you learned how to create and use basic Pivot Tables to summarize and analyze large datasets. Pivot Tables help organize raw data into meaningful summaries such as totals, averages, and counts. However, Excel provides more advanced features that allow deeper analysis and better data visualization.

This unit introduces **Advanced Pivot Table features and Pivot Charts**, which enhance the power of data analysis. You will learn how to group data, apply advanced filtering, customize layouts, and use Pivot Charts for interactive data presentation. These features allow users to analyze complex datasets more efficiently and present insights clearly.

While studying this unit, relate these tools to real-life scenarios such as sales analysis, academic result evaluation, or business performance reporting. Advanced Pivot tools help in making faster, accurate, and data-driven decisions.

14.2. OBJECTIVE

After studying this unit, you will be able to:

- Apply advanced sorting and filtering in Pivot Tables

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- Group data within Pivot Tables
- Use subtotals, grand totals, and value field settings
- Customize Pivot Table layout and design
- Create and modify Pivot Charts
- Use slicers and filters for interactive analysis
- Apply advanced Pivot tools in education and industry
- Support data-driven decision-making

14.3. ADVANCED PIVOT TABLE FEATURES

Advanced Pivot Table features allow users to perform deeper and more flexible data analysis. While basic Pivot Tables summarize data, advanced features help organize, group, filter, and customize results according to specific needs.

These features are especially useful when dealing with large datasets such as yearly sales reports, examination results across multiple classes, or financial statements. Advanced tools help users identify patterns, compare categories, and generate meaningful insights quickly.

14.3.1. Sorting, Filtering, and Grouping in Pivot Tables

Sorting, filtering, and grouping are powerful tools that enhance Pivot Table analysis.

- Sorting allows arranging data in ascending or descending order (e.g., highest to lowest sales).
- Filtering helps display specific data while hiding unnecessary details (e.g., showing only a particular region).
- Grouping allows combining data into categories such as months into quarters or ages into ranges.

For example, sales data can be grouped by month, quarter, or year for better understanding. These tools improve clarity and help focus on relevant information.

14.3.1.1. Subtotals, Grand Totals, and Value Field Settings

Advanced Pivot Tables provide automatic calculation features:

- Subtotals show intermediate totals for categories.
- Grand Totals display the overall total of all values.
- Value Field Settings allow users to change calculation types such as Sum, Count, Average, Percentage, or Difference from.

These features help users analyze data from multiple perspectives without writing formulas manually.

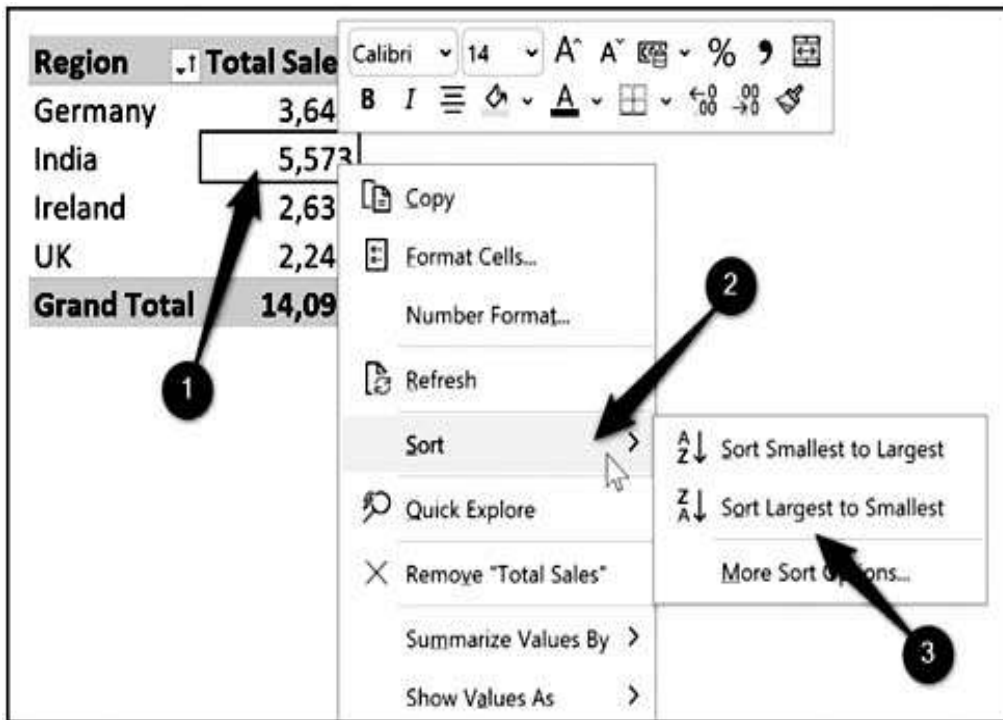


Fig. 14.1 : Advanced Pivot Table Features

14.3.2. Customizing Pivot Table Layout and Design

Excel allows customization of Pivot Table appearance and layout for better presentation.

Users can:

- Change report layout (Compact, Outline, or Tabular form)
- Modify styles and formatting
- Add or remove totals
- Rename fields
- Refresh data when updates occur

Customizing layout improves readability and makes reports more professional and presentable.



Activity 14.1.

1. Create a dataset containing monthly sales data for different regions.
2. Insert a Pivot Table using the dataset.
3. Apply **sorting** to arrange sales from highest to lowest.
4. Use **filtering** to display data for a specific region only.
5. Group months into quarters using the grouping feature.
6. Observe subtotals and grand totals automatically **generated**.

Discuss how these features help in analyzing data more effectively.

Objective : To apply advanced Pivot Table tools in Excel.

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☒ **Check Your Progress 14.1.**

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

- 1. What is the purpose of grouping in a Pivot Table?
.....
.....
.....
- 2. Which feature displays intermediate totals for categories?
.....
.....
.....
- 3. Why are Value Field Settings important?
.....
.....
.....
- 4. How does filtering improve data analysis?
.....
.....
.....

14.4. PIVOT CHARTS

A **Pivot Chart** is a visual representation of data summarized through a Pivot Table. While a Pivot Table presents summarized data in tabular form, a Pivot Chart converts that summarized data into a graphical format such as column, bar, line, or pie chart. This makes it easier to interpret large datasets quickly and effectively.

Pivot Charts are dynamic in nature. They are directly linked to the Pivot Table from which they are created. Any changes made in the Pivot Table—such as filtering, grouping, or rearranging fields—are automatically reflected in the Pivot Chart. This dynamic feature makes Pivot Charts powerful tools for interactive analysis and reporting.

Pivot Charts are widely used in business reports, academic performance analysis, sales dashboards, and management presentations because they combine numerical accuracy with visual clarity.

14.4.1. Creating and Modifying Pivot Charts

Creating a Pivot Chart is simple and efficient:

1. First, create a Pivot Table using the dataset.
2. Select any cell within the Pivot Table.
3. Click on the **Insert** tab and choose **Pivot Chart**.
4. Select the desired chart type (Column, Line, Pie, Bar, etc.).
5. Click OK.

Once created, Pivot Charts can be modified to improve presentation and clarity. Users can:

- Change the chart type based on analysis needs
- Modify chart styles and colors
- Add or edit chart titles
- Insert data labels for better understanding

Adjust axis titles and gridlines

Pivot Charts automatically update when the layout of the Pivot Table changes. For example, if a user groups months into quarters in the Pivot Table, the Pivot Chart immediately reflects this grouping.

This flexibility makes Pivot Charts suitable for dynamic reporting environments.

14.4.1.1. Interactive Filtering and Slicers

One of the most powerful features of Pivot Charts is **interactive filtering**.

Filters

Filters allow users to display selected categories of data. For example, in a sales report, a filter can display sales for only one region or one product category.

Slicers

Slicers are visual filtering tools introduced to make filtering easier and more interactive. Instead of using dropdown menus, slicers provide clickable buttons. When a user clicks a slicer button (e.g., “North Region”), both the Pivot Table and Pivot Chart update instantly.

Slicers improve user experience because:

- They are easy to use
- They clearly show which filters are applied
- They enhance dashboard interactivity

Interactive filtering allows real-time data exploration, making Pivot Charts powerful tools for analysis and presentations.

14.4.2. Importance of Pivot Charts in Data Visualization

Pivot Charts play an important role in data visualization because they simplify complex data. Large datasets that may contain hundreds or

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thousands of rows can be summarized and displayed visually in seconds.

They help users:

- Identify trends and patterns
- Compare categories easily
- Detect high and low performance areas
- Understand relationships between variables

For example, a Pivot Chart showing monthly sales performance can instantly reveal seasonal trends. Similarly, a chart displaying subject-wise average marks can highlight academic strengths and weaknesses.

Because visual information is processed faster than numerical tables, Pivot Charts improve comprehension and communication. They are particularly useful in meetings, presentations, and reports where clarity and impact are important.

14.4.3. Scope of Advanced Pivot Tools in Education and Industry

Advanced Pivot tools, including Pivot Charts and slicers, have wide applications in both education and industry.

In Education

- Analyzing student performance by subject or class
- Tracking attendance trends
- Evaluating examination results
- Preparing academic performance reports

Teachers and administrators can quickly identify areas needing improvement by using Pivot Charts.

In Industry

- Sales performance analysis
- Financial reporting and budgeting
- Inventory management
- Human resource data analysis

Managers use advanced Pivot tools to generate summarized dashboards that support strategic planning.

Because organizations generate large amounts of data daily, advanced Pivot tools are essential for efficient data management and analysis.

14.4.3.1. Role of Advanced Pivot Tables in Decision Making

Advanced Pivot Tables and Pivot Charts play a critical role in data-driven decision making. Decision-makers often rely on summarized data rather than raw datasets. Pivot tools transform raw data into structured insights.

They help in:

- Identifying profitable products
- Tracking performance trends
- Comparing departments or regions
- Evaluating financial performance

For example, if a Pivot Chart shows declining sales in a specific region, management can take corrective action immediately. Similarly, academic institutions can revise teaching strategies based on performance trends revealed through Pivot analysis.

By presenting data clearly, dynamically, and interactively, advanced Pivot tools reduce guesswork and support logical, evidence-based decisions.

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Fig. 14.2 : Advanced Pivot Chart with Slicer.



Activity 14.2.

1. Create a dataset showing monthly sales for different regions and products.
2. Insert a Pivot Table summarizing sales by region.
3. Create a Pivot Chart (Column or Line chart).
4. Insert a Slicer for product category.
5. Click different slicer buttons and observe how the Pivot Chart updates dynamically.
6. Modify chart type and compare clarity.

Discussion Question :

How does the use of slicers make data analysis faster and more interactive?

Objective : To understand advanced Pivot Charts and interactive filtering.

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☒ **Check Your Progress 14.2.**

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is a Pivot Chart?

2. How does a Pivot Chart differ from a normal Excel chart?

3. What is the function of slicers in Pivot Charts?

4. Why are Pivot Charts important in decision-making?

5. Mention one application of Pivot Charts in education or industry.

14.5. SUMMARY

This unit explained Advanced Pivot Tables and Pivot Charts in Excel. Learners studied advanced features such as sorting, filtering, grouping, subtotals, grand totals, and value field settings. The unit also introduced Pivot Charts, which visually represent summarized data from Pivot Tables. Interactive tools like filters and slicers were discussed to enhance data analysis and presentation. The scope of advanced Pivot tools in education and industry was highlighted, along with their role in data-driven decision-making. Overall, this unit emphasized that advanced Pivot features improve analytical accuracy, efficiency, and clarity in handling large datasets.

14.6. GLOSSARY

- **Advanced Pivot Table** – A Pivot Table that uses features like grouping, filtering, subtotals, and custom calculations for deeper analysis.
- **Pivot Chart** – A graphical representation of data summarized through a Pivot Table.
- **Grouping** – Combining related data categories such as months into quarters.
- **Slicer** – An interactive filtering tool that provides clickable buttons to filter Pivot data.
- **Subtotals** – Intermediate totals shown within grouped data.
- **Grand Total** – The overall total of all summarized values in a Pivot Table.
- **Value Field Settings** – Options that allow changing calculation types such as Sum, Count, or Average.
- **Interactive Analysis** – Real-time data filtering and modification for better insights.

14.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 14.1

1. **Answer** : Grouping combines related data into categories such as months into quarters. It simplifies large datasets and improves understanding.
2. **Answer** : Subtotals show intermediate totals within categories.
3. **Answer** : They allow changing calculation types like Sum, Count, or Average. Value Field Settings provide flexibility in analysis.
4. **Answer** : Filtering displays only selected data and hides unnecessary information. It helps focus on relevant data for better insights.

Check Your Progress 14.2

1. **Answer** : A Pivot Chart is a graphical representation of summarized data from a Pivot Table. It visually displays Pivot Table results.
2. **Answer** : A Pivot Chart is directly linked to a Pivot Table and updates automatically when changes are made. Normal charts do not automatically adjust with field changes.
3. **Answer** : Slicers provide interactive buttons to filter data easily. They allow quick and clear visual filtering.

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4. Answer : They present summarized data visually, helping decision-makers identify trends and patterns quickly. Clear visualization supports faster and accurate decisions.

5. Answer : Sales analysis, academic result evaluation, or performance reporting. Pivot Charts are widely used for summarizing and presenting data.

14.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3738	

14.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
- National Programme on Technology Enhanced Learning (NPTEL). (2022). Spreadsheet applications and data handling. IIT Consortium.
- AISECT Learning Services. (2024). Open educational resources on Microsoft Excel. AISECT Publications.
- Walkenbach, J. (2019). Excel 2019 Bible. Wiley.
- Harvey, G. (2020). Excel for dummies (7th ed.). Wiley.
- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

14.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. Pivot Charts are linked to:
 - (a) Normal charts
 - (b) Pivot Tables
 - (c) Word documents
 - (d) Text files

2. Which feature groups months into quarters?
 - (a) Sorting
 - (b) Filtering
 - (c) Grouping
 - (d) Formatting
3. Which option shows intermediate totals?
 - (a) Grand Total
 - (b) Subtotals
 - (c) Filters
 - (d) Slicers
4. Slicers are mainly used for:
 - (a) Deleting data
 - (b) Formatting cells
 - (c) Interactive filtering
 - (d) Printing charts
5. Value Field Settings allow changing:
 - (a) Font style
 - (b) Calculation type
 - (c) Chart color
 - (d) Worksheet name

Answers with Explanation :

1. (b) Pivot Tables

Explanation : Pivot Charts are directly connected to Pivot Tables.

2. (c) Grouping

Explanation : Grouping organizes related data such as months into quarters.

3. (b) Subtotals

Explanation : Subtotals display intermediate totals within categories.

4. (c) Interactive filtering

Explanation : Slicers allow easy visual filtering.

5. (b) Calculation type

Explanation: Value Field Settings change calculations like Sum or Average.

B. Small Answer Type Questions

1. What is searching in data?

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2. What is a search key?
3. What is hashing?
4. What is a hash table?

Part- 2

B. Long Answer Type Questions (200 Words Each)

1. Explain advanced features of Pivot Tables such as grouping, filtering, and value field settings.
2. Describe the importance of Pivot Charts in business reporting and academic analysis.

Part 3

C. Long Answer Type Questions (300 Words Each)

1. Discuss how Advanced Pivot Tables and Pivot Charts support decision-making in organizations.
2. Explain the process of creating, customizing, and using interactive Pivot Charts with slicers.



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DR. C. V. RAMAN UNIVERSITY (C.G.)

SLM FEEDBACK FORM

PROGRAMME : _____

COURSE : _____

BLOCK : _____

UNIT : _____

Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill up and send us the following questionnaire, which pertains to this block. If you find the space provided insufficient, kindly use a separate sheet.

Please mail to aisectcontent@aisect.org/ for online submission please scan QR code:

Questionnaire

1. Name : _____

2. Enrolment No. :

--	--	--	--	--	--	--	--	--	--	--

3. How many hours did you need for studying the units? :

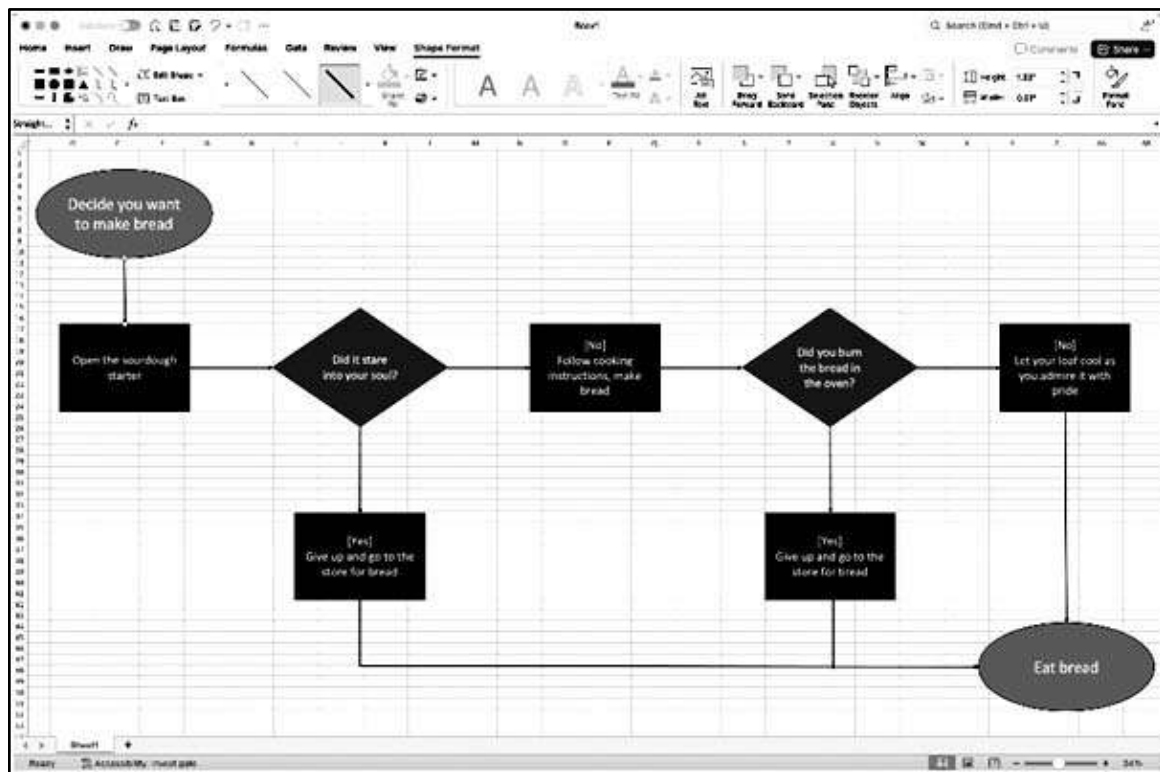
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4. Please give your reactions to the following items based on your reading of the block:

Items	Excellent	Very Good	Good	Poor	Give specific Examples (If poor)
Presentation Quality					
Language and Style					
Illustrations					
Used (diagrams, tables, etc.)					
Conceptual Clarity					
Check Your Progress Questions					
Suggested Readings - OER					

5. Any other comments:

Block V	SPREADSHEET TOOLS AND MACROS	137 – 166
Unit 15	Managing Worksheets and Workbooks	139
Unit 16	Screen Control and Data Transfer	147
Unit 17	Introduction to Macros	157



Block V focuses on advanced spreadsheet tools and automation techniques that enhance efficiency and productivity in Excel. While previous blocks emphasized data entry, analysis, visualization, and Pivot tools, this block introduces powerful features that help users automate repetitive tasks, ensure data accuracy, and improve workflow management.

This block covers tools such as **Data Validation, Conditional Formatting, Protection Features, What-If Analysis, Macros, and Automation Tools**. Learners will understand how to streamline spreadsheet operations, reduce manual effort, and build intelligent spreadsheets capable of performing repetitive tasks automatically.

The skills learned in this block prepare learners for professional environments where efficiency, accuracy, and automation are essential.

UNIT – 15

MANAGING WORKSHEETS AND WORKBOOKS

NOTES

UNIT STRUCTURE

- 15.1 Introduction**
- 15.2 Objective**
- 15.3 Concept of Worksheets and Workbooks**
- 15.4 Organizing and Structuring Workbooks**
- 15.5 Summary**
- 15.6 Glossary**
- 15.7 Answer to Check Your Progress**
- 15.8 Suggested Readings – OER**
- 15.9 Reference**
- 15.10 Exercise**

15.1. INTRODUCTION

In the previous units, you learned how to create spreadsheets, use formulas, generate charts, and analyze data using Pivot Tables. However, as datasets grow larger and more complex, it becomes important to manage worksheets and workbooks efficiently. Proper organization ensures smooth navigation and prevents confusion while working with multiple sheets.

This unit introduces the concept of managing worksheets and workbooks in Excel. You will learn how to create, rename, move, copy, delete, protect, and organize worksheets effectively. These skills help maintain clarity, security, and structure within a workbook.

While studying this unit, think about real-life situations such as managing subject-wise student marks, department-wise sales reports, or monthly expense sheets. Effective worksheet management improves efficiency and professionalism.

15.2. OBJECTIVE

After studying this unit, you will be able to:

- Apply advanced sorting and filtering in Pivot Tables

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- Group data within Pivot Tables
- Use subtotals, grand totals, and value field settings
- Customize Pivot Table layout and design
- Create and modify Pivot Charts
- Use slicers and filters for interactive analysis
- Apply advanced Pivot tools in education and industry
- Support data-driven decision-making

15.3. CONCEPT OF WORKSHEETS AND WORKBOOKS

A **Workbook** is an Excel file that contains one or more worksheets. A **Worksheet** is a single spreadsheet within a workbook, consisting of rows and columns where data is entered.

For example, a school may maintain one workbook for annual records, and each worksheet may represent a different class or subject. Understanding the relationship between worksheets and workbooks is essential for effective spreadsheet organization.

15.3.1. Creating, Renaming, and Deleting Worksheets

Excel allows users to manage worksheets easily.

Creating Worksheets :

Click the "+" icon near sheet tabs to add a new worksheet.

Renaming Worksheets :

Double-click on the sheet tab and type a new name (e.g., "Sales 2025").

Deleting Worksheets :

Right-click the sheet tab and select Delete.

Proper naming and organization improve clarity and navigation.

15.3.1.1. Moving, Copying, and Grouping Worksheets

Excel provides options to rearrange sheets:

- **Moving Worksheets** : Drag sheet tabs to change order.
- **Copying Worksheets** : Right-click → Move or Copy → Create a copy.
- **Grouping Worksheets** : Select multiple sheets to apply formatting simultaneously.

Grouping is useful when entering similar data across multiple sheets.

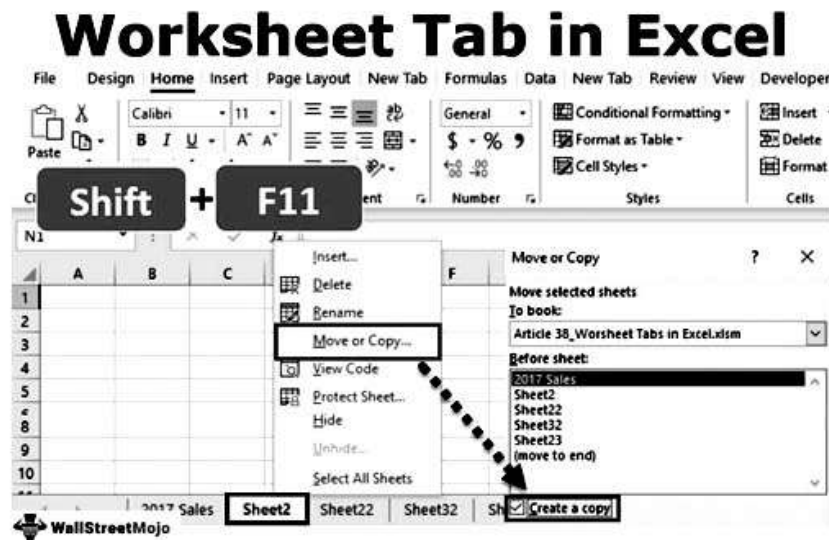


Fig. 15.1 : Structure of Workbook and Worksheet.

15.3.2. Managing Multiple Worksheets in a Workbook

Large workbooks may contain many worksheets. Managing them effectively includes:

- Naming sheets clearly
- Arranging sheets logically
- Using color codes for identification
- Linking data between sheets

Efficient management ensures smooth workflow and prevents data misplacement.



Activity 15.1.

1. Open a new Excel workbook.
2. Create three worksheets named January, February, and March.
3. Rename Sheet1 to Summary.
4. Copy the January worksheet and rename it January_Copy.
5. Group all monthly worksheets and apply bold formatting to row 1.

Objective : To practice worksheet management skills.



Check Your Progress 15.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is a worksheet?

.....

NOTES

2. How can you rename a worksheet?
.....
.....
.....
3. What is the use of grouping worksheets?
.....
.....
.....
4. How do you create a copy of a worksheet?
.....
.....
.....

15.4. ORGANIZING AND STRUCTURING WORKBOOKS

Organizing and structuring workbooks is important when working with large or long-term data. A well-organized workbook helps users find information quickly, avoid errors, and maintain data consistency. Workbook organization includes arranging worksheets logically, naming them clearly, separating raw data from summaries, and applying protection where required.

For example, in an academic workbook, one worksheet may store raw marks, another may calculate totals, and a third may show result summaries. Such structuring improves readability and professionalism.

15.4.1. Protecting and Hiding Worksheets

Protection features prevent accidental changes.

- **Protect Sheet** : Restricts editing of selected cells.
- **Protect Workbook** : Prevents adding or deleting sheets.
- **Hide Sheet** : Temporarily hides confidential worksheets.

These tools help secure sensitive data such as financial records or exam results.

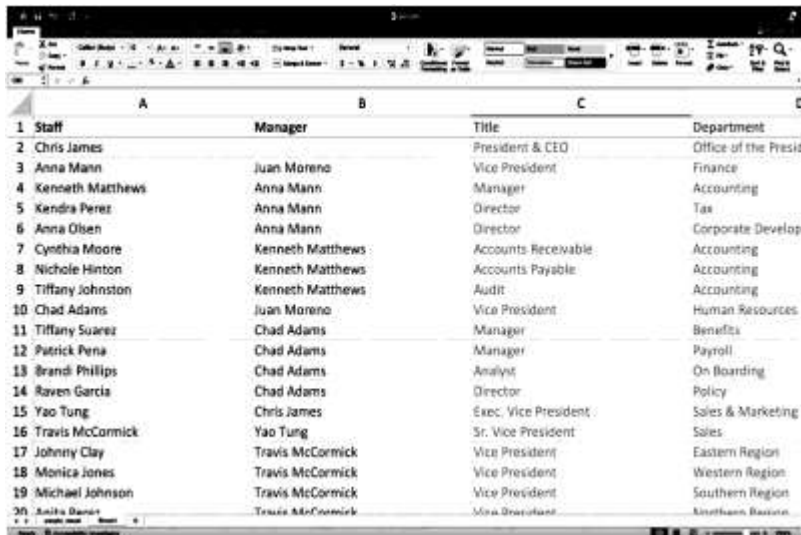
15.4.1.1. Practical Handling of Workbook Structure

In real-life situations:

- Businesses maintain separate sheets for monthly reports.
- Schools use different sheets for each class.
- Financial analysts separate raw data and summary sheets.

Maintaining structure improves readability and efficiency.

NOTES



Staff	Manager	Title	Department
Chris James		President & CEO	Office of the President
Anna Mann	Juan Moreno	Vice President	Finance
Kenneth Matthews	Anna Mann	Manager	Accounting
Kendra Perez	Anna Mann	Director	Tax
Anna Olsen	Anna Mann	Director	Corporate Development
Cynthia Moore	Kenneth Matthews	Accounts Receivable	Accounting
Nichole Hinton	Kenneth Matthews	Accounts Payable	Accounting
Tiffany Johnston	Kenneth Matthews	Audit	Accounting
Chad Adams	Juan Moreno	Vice President	Human Resources
Tiffany Suarez	Chad Adams	Manager	Benefits
Patrick Pena	Chad Adams	Manager	Payroll
Brandi Phillips	Chad Adams	Analyst	On Boarding
Raven Garcia	Chad Adams	Director	Policy
Yao Tung	Chris James	Exec. Vice President	Sales & Marketing
Travis McCormick	Yao Tung	Sr. Vice President	Sales
Johnny Clay	Travis McCormick	Vice President	Eastern Region
Monica Jones	Travis McCormick	Vice President	Western Region
Michael Johnson	Travis McCormick	Vice President	Southern Region
Julia Danner	Travis McCormick	Vice President	Northern Region

Fig. 15.2 : Well-organized workbook structure in Excel



Activity 15.2.

1. Open a workbook with at least four worksheets.
2. Rename the sheets meaningfully (e.g., Data, Summary, Report, Backup).
3. Rearrange the worksheets in logical order.
4. Protect the Summary worksheet with a password.
5. Hide the Backup worksheet.

Objective : To practice organizing and securing a workbook.



Check Your Progress 15.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why is organizing a workbook important?

.....

.....

.....

2. What is the purpose of protecting a worksheet?

.....

.....

.....

3. When should a worksheet be hidden?

.....

.....

.....

NOTES

15.5. SUMMARY

This unit explained the concept of worksheets and workbooks and the importance of managing them effectively. Learners studied how to create, rename, delete, move, and copy worksheets. The unit also covered organizing workbooks, protecting sheets, and maintaining proper structure. Effective worksheet management ensures clarity, security, and efficiency in spreadsheet tasks.

15.6. GLOSSARY

- **Workbook** – An Excel file containing one or more worksheets.
- **Worksheet** – A single spreadsheet page within a workbook.
- **Grouping** – Selecting multiple sheets to apply actions simultaneously.
- **Protect Sheet** – A feature that restricts editing in a worksheet.
- **Hide Sheet** – A feature used to temporarily conceal a worksheet.
- **Sheet Tab** – The tab at the bottom used to navigate between worksheets.

15.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 15.1

- 1. Answer :** A worksheet is a single spreadsheet page within a workbook.

It contains rows and columns where data is entered.

- 2. Answer :** By double-clicking the sheet tab and typing a new name.
This is the quickest way to rename a worksheet.

- 3. Answer :** Grouping allows applying the same action to multiple worksheets at once. It saves time and ensures uniform formatting.

- 4. Answer :** Right-click the sheet tab, choose Move or Copy, and select Create a copy. This creates a duplicate worksheet within the workbook.

Check Your Progress 15.2

- 1. Answer :** It helps users find information easily and reduces errors. Organized workbooks improve clarity and efficiency.
- 2. Answer :** To prevent accidental or unauthorized changes to data. Protection secures important information.
- 3. Answer :** When the data is confidential or not required for regular viewing. Hiding protects sensitive information.

15.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3739	

NOTES

15.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
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- Harvey, G. (2020). Excel for dummies (7th ed.). Wiley.
- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

15.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. A workbook in Excel is:
 - (a) A single worksheet
 - (b) A collection of rows and columns
 - (c) An Excel file containing one or more worksheets
 - (d) A chart file
2. Which option is used to rename a worksheet?
 - (a) File → Save As
 - (b) Right-click sheet tab → Rename
 - (c) Insert → Table
 - (d) View → Zoom
3. Grouping worksheets allows you to:
 - (a) Delete multiple sheets
 - (b) Apply changes to multiple sheets at the same time
 - (c) Protect the workbook
 - (d) Hide worksheets
4. Which feature prevents unauthorized editing of data?
 - (a) Hide Sheet
 - (b) Protect Sheet
 - (c) Rename Sheet
 - (d) Copy Sheet

NOTES

5. Which action is used to rearrange worksheets?
- (a) Sorting (b) Filtering
(c) Dragging sheet tabs (d) Formatting cells

Answers with Explanation :**1. (c) An Excel file containing one or more worksheets**

Explanation : A workbook is the main Excel file. It can contain multiple worksheets used to store and organize related data.

2. (b) Right-click sheet tab → Rename

Explanation : Renaming a worksheet is done by right-clicking on the sheet tab and selecting the Rename option.

3. (b) Apply changes to multiple sheets at the same time

Explanation : Grouping worksheets enables users to apply formatting or data entry to several worksheets simultaneously, saving time.

4. (b) Protect Sheet

Explanation : The Protect Sheet feature restricts editing and prevents accidental or unauthorized changes to worksheet data.

5. (c) Dragging sheet tabs

Explanation : Worksheets can be rearranged by clicking and dragging their sheet tabs to the desired position.

B. Small Answer Type Questions

1. How can a worksheet be renamed?
2. How can a worksheet be copied?
3. How can worksheets be moved?
4. How can a workbook be protected?

Part- 2**C. Long Answer Type Questions (200 Words Each)**

1. Explain how worksheets can be created, renamed, moved, copied, and deleted in Excel.
2. Describe the importance of organizing and structuring workbooks in real-life applications.

Part 3**D. Long Answer Type Questions (300 Words Each)**

1. Discuss workbook management techniques used in educational institutions and business organizations.
2. Explain the role of worksheet protection and hiding in maintaining data security.

UNIT – 16

SCREEN CONTROL AND DATA TRANSFER

NOTES

UNIT STRUCTURE

- 16.1 Introduction**
- 16.2 Objective**
- 16.3 Screen Control Features in Excel**
- 16.4 Data Transfer Techniques**
- 16.5 Summary**
- 16.6 Glossary**
- 16.7 Answer to Check Your Progress**
- 16.8 Suggested Readings – OER**
- 16.9 Reference**
- 16.10 Exercise**

16.1. INTRODUCTION

In the previous unit, you learned how to manage worksheets and workbooks effectively. Once data is well organized, the next challenge is working comfortably on the screen and transferring data efficiently between worksheets and workbooks. When dealing with large datasets, scrolling, viewing, and copying data can become difficult if proper screen control tools are not used.

This unit introduces screen control features and data transfer techniques in Excel. You will learn how to control the Excel screen view for better visibility and how to transfer data accurately using different copy and paste methods. These tools help users work faster, reduce errors, and handle large spreadsheets smoothly.

While studying this unit, think about real-life situations such as comparing long reports, viewing headings while scrolling, or copying data from one worksheet to another. Screen control and data transfer tools make such tasks simple and efficient.

16.2. OBJECTIVE

After studying this unit, you will be able to:

- Understand screen control features in Excel

NOTES

- Use split, freeze, and view options for better navigation
- Manage multiple windows and workbooks
- Copy and paste data using different methods
- Use Paste Special options effectively
- Transfer data accurately between worksheets and workbooks

16.3. SCREEN CONTROL FEATURES IN EXCEL

Screen control features in Excel help users manage how data is displayed on the screen. These tools are especially useful when working with large worksheets that contain many rows and columns. Proper screen control improves readability and makes data handling more comfortable.

Excel provides several screen control options that allow users to view different parts of a worksheet at the same time, keep headings visible while scrolling, and adjust zoom levels according to need.

16.3.1. Splitting and Freezing Panes

When working with large worksheets containing many rows and columns, it becomes difficult to keep headings or key data visible while scrolling. Excel provides **Split** and **Freeze Panes** features to solve this problem and improve screen navigation.

Freeze Panes

Freeze Panes keeps selected rows or columns visible while the rest of the worksheet scrolls. This is especially useful when headings are placed at the top or left of a worksheet.

Types of Freeze Panes:

- **Freeze Top Row** – Keeps the first row visible while scrolling down
- **Freeze First Column** – Keeps the first column visible while scrolling sideways
- **Freeze Panes** – Freezes selected rows and columns together

For example, while viewing a long list of student marks, freezing the top row ensures that column headings like Name, Roll Number, and Marks remain visible.

Split Panes

The Split option divides the worksheet window into two or four separate panes. Each pane can scroll independently, allowing users to view different parts of the same worksheet at the same time.

Uses of Split Panes :

- Comparing distant rows or columns
- Viewing summary and detailed data together
- Analyzing large datasets efficiently

Both Split and Freeze Panes improve accuracy, reduce scrolling effort, and enhance productivity.

16.3.1.1. Zoom, View Options, and Window Arrangement

Excel provides several view controls to adjust how data appears on the screen.

Zoom Options

Zoom allows users to increase or decrease the size of worksheet content on the screen.

- Zoom In – Makes data appear larger for easy reading
- Zoom Out – Fits more data on the screen

Zoom does not change actual data size; it only affects screen display.

View Options

Excel offers different viewing modes to suit user needs:

- **Normal View** – Default view for regular work
- **Page Layout View** – Shows how the worksheet will look when printed
- **Page Break Preview** – Helps adjust page breaks before printing

These views help users prepare worksheets for printing and presentation.

Window Arrangement

Excel allows arranging multiple workbook windows using options such as:

- Arrange All (Tiled, Vertical, Horizontal)
- Switch Windows

These options are useful when comparing data between worksheets or workbooks side by side.

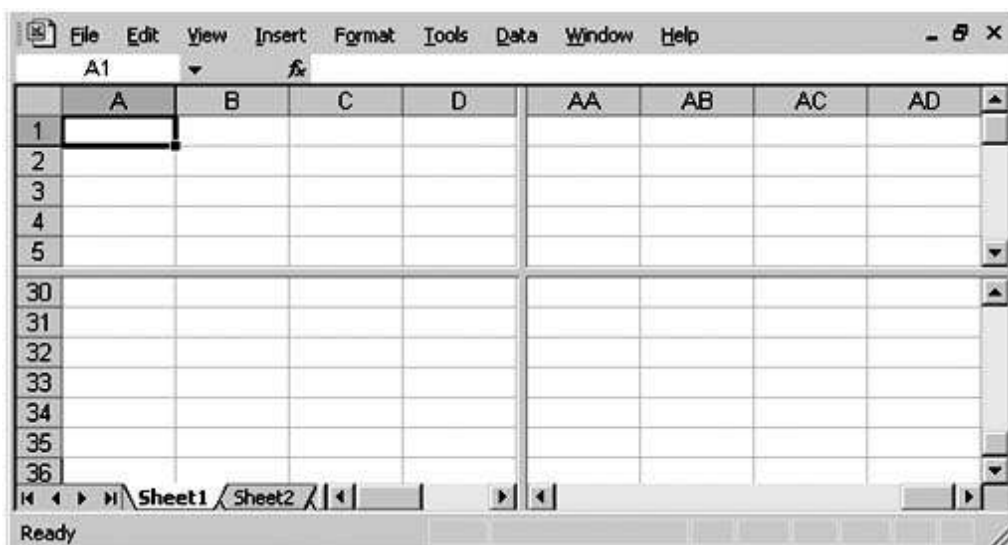


Fig. 16.1 : Screen control features.

NOTES

16.3.2. Managing Multiple Windows and Workbooks

In many real-life situations, users work with more than one workbook at a time. Excel allows opening multiple workbooks and managing them efficiently.

Managing Multiple Windows

A single workbook can be opened in multiple windows using the New Window option. This allows users to view different parts of the same worksheet simultaneously.

Managing Multiple Workbooks

Excel supports working with several workbooks at once. Users can:

- Switch between workbooks easily
- Copy or move data from one workbook to another
- Compare reports side by side

For example, a teacher may compare attendance records from two different months stored in separate workbooks.

Importance

- Improves multitasking
- Supports comparison and verification
- Saves time during data transfer

Managing multiple windows and workbooks is essential for professionals handling large and complex datasets.

**Activity 16.1.**

1. Open an Excel worksheet with more than 30 rows and 10 columns of data.
2. Apply Freeze Top Row and scroll down the worksheet.
3. Remove Freeze Panes and apply Freeze First Column.
4. Use Split to divide the worksheet into two panes and scroll them independently.
5. Adjust the Zoom level to 150% and then to 75%.
6. Open another workbook and use Arrange All to view both workbooks side by side.

Objective : To practice screen control features for better worksheet navigation.

**Check Your Progress 16.1.**

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. What is the purpose of Freeze Panes in Excel?

.....

.....

.....

2. How is Split different from Freeze Panes?

.....

.....

.....

3. How is Split different from Freeze Panes?

.....

.....

.....

4. Why is managing multiple windows useful?

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.....

.....

5. Name one situation where screen control features are helpful.

16.4. DATA TRANSFER TECHNIQUES

Data transfer techniques in Excel are used to copy, move, and link data between cells, worksheets, and workbooks. These techniques help users avoid retyping data, reduce errors, and save time. Data transfer is especially useful when preparing reports, summaries, or consolidating information from different sources.

Excel provides several options such as **Copy, Paste, Paste Special, and Linking data** to support efficient data movement.

16.4.1.1. Linking Data Between Worksheets and Workbooks

Linking allows data in one worksheet or workbook to update automatically when the source data changes.

- **Within a workbook** : Link cells across different worksheets
- **Between workbooks** : Link data from one Excel file to another

For example, a summary sheet can be linked to monthly data sheets so totals update automatically.

Advantages of Linking

- Reduces manual updates
- Ensures data consistency
- Saves time
- Supports dynamic reports

NOTES

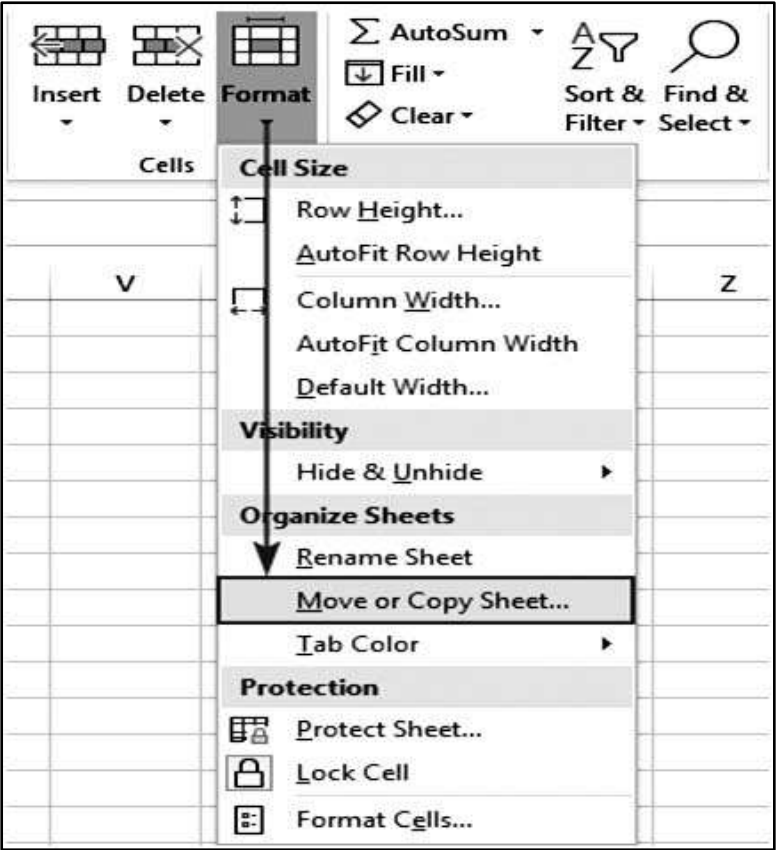


Fig. 16.2 : Copy, Paste Special, and Linking Data in Excel.



Activity 16.2.

1. Open a workbook with at least four worksheets.
2. Rename the sheets meaningfully (e.g., Data, Summary, Report, Backup).
3. Rearrange the worksheets in logical order.
4. Protect the Summary worksheet with a password.
5. Hide the Backup worksheet.

Objective : To practice organizing and securing a workbook.



Check Your Progress 16.2.

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

1. Enter data in Sheet1 including numbers and formulas.?
.....
.....
.....
2. Copy the data and paste it into Sheet2 using **Paste Special** → **Values**.

.....

.....

.....

3. Apply Transpose to convert rows into columns.?

.....

.....

.....

4. Create a link between Sheet1 and Sheet3 for a total value.

.....

.....

.....

5. Modify the original data and observe changes in the linked sheet.

.....

.....

.....

Objective: To practice data transfer techniques in Excel.

16.5. SUMMARY

This unit focused on **Screen Control and Data Transfer** features in Excel. Learners studied screen control tools such as Freeze Panes, Split Panes, Zoom options, different view modes, and window arrangement, which help in navigating large worksheets easily. The unit also explained data transfer techniques including Copy, Paste, Paste Special, and linking data between worksheets and workbooks. These tools improve efficiency, accuracy, and ease of working with large datasets. Overall, the unit emphasized how proper screen control and data transfer techniques support smooth spreadsheet operations in real-life and professional environments.

16.6. GLOSSARY

- **Freeze Panes** – A feature that keeps selected rows or columns visible while scrolling.
- **Split Panes** – Divides the worksheet window into multiple sections for independent scrolling.
- **Zoom** – Adjusts the display size of worksheet content on the screen.
- **Paste Special** – An advanced paste option that allows selective pasting of values, formulas, or formats.
- **Linking** – Connecting data between worksheets or workbooks so updates occur automatically.
- **Workbook Window** – A separate view of a workbook that allows multitasking and comparison.

16.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 16.1

- Answer :** Freeze Panes keeps selected rows or columns visible while scrolling: It helps users view headings continuously.
- Answer :** Split divides the worksheet into independent panes, while Freeze Panes locks specific rows or columns. Split allows multiple scrolling areas.
- Answer :** No, Zoom only changes the display size on the screen. Data size remains unchanged.
- Answer :** It allows users to compare data from different areas or workbooks easily. Multiple windows improve multitasking.
- Answer :** While working with long reports, student records, or financial data.

Screen control improves readability and efficiency.

Check Your Progress 16.2

- Answer :** Freeze Panes keeps selected rows or columns visible while scrolling through a worksheet.
- Answer :** No, Zoom only changes the display size on the screen, not the actual data.
- Answer :** Paste Special allows users to paste specific elements like values or formats instead of entire data.
- Answer :** The linked data updates automatically in the destination worksheet or workbook.

16.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3740	

16.9. REFERENCE

- Ministry of Education, Government of India. (2023). Digital skills and spreadsheet fundamentals. DIKSHA.
- SWAYAM. (2022). Introduction to Microsoft Excel. Government of India.
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- Microsoft Corporation. (2023). Excel documentation and learning pathways. Microsoft Learn.
- Alexander, M. (2021). Excel basics to advanced analytics. Packt Publishing.

16.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. Which feature keeps headings visible while scrolling?
 - (a) Split
 - (b) Zoom
 - (c) Freeze Panes
 - (d) Arrange All
2. Which option allows pasting only values?
 - (a) Paste
 - (b) Paste Special
 - (c) Copy
 - (d) Link
3. Zoom option affects:
 - (a) Actual data size
 - (b) Cell values
 - (c) Screen display only
 - (d) File size
4. Which feature divides a worksheet into sections?
 - (a) Freeze Panes
 - (b) Split
 - (c) Filter
 - (d) Protect Sheet
5. Linking data helps in:
 - (a) Deleting data
 - (b) Automatic data updates
 - (c) Formatting cells
 - (d) Printing worksheets

Answers with Explanation

1. (c) Freeze Panes

NOTES

Explanation : Freeze Panes locks selected rows or columns so that headings remain visible even when the worksheet is scrolled down or sideways.

2. (b) Paste Special

Explanation : Paste Special provides different paste options. Choosing Values pastes only the results and removes formulas from the copied data.

3. (c) Screen display only

Explanation : Zoom changes only how data appears on the screen. It does not change the actual data, formulas, or worksheet size.

4. (b) Split

Explanation : Split divides the worksheet window into separate panes that can scroll independently.

5. (b) Automatic data updates

Explanation : Linked data updates automatically whenever changes are made to the source worksheet or workbook.

B. Small Answer Type Questions :

1. What is Freeze Panes in Excel?
2. What is the purpose of Zoom?
3. What is data transfer?
4. How can Excel data be imported?

Part- 2

C. Long Answer Type Questions (200 Words Each)

1. Explain screen control features in Excel and their importance.
2. Describe different data transfer techniques available in Excel.

Part 3

D. Long Answer Type Questions (300 Words Each)

1. Discuss how screen control and data transfer tools improve productivity in real-life spreadsheet applications.
2. Explain the role of Paste Special and data linking in preparing professional reports.

UNIT – 17

INTRODUCTION TO MACROS

NOTES

UNIT STRUCTURE

- 17.1 Introduction**
- 17.2 Objective**
- 17.3 Understanding Macros and Automation**
- 17.4 Managing Macro Security**
- 17.5 Summary**
- 17.6 Glossary**
- 17.7 Answer to Check Your Progress**
- 17.8 Suggested Readings – OER**
- 17.9 Reference**
- 17.10 Exercise**

17.1. INTRODUCTION

In the previous unit, you learned how to control the Excel screen and transfer data efficiently using different tools. While these features improve ease of work, many tasks in Excel are still repetitive in nature, such as formatting reports, copying data, or applying the same steps again and again. Performing these tasks manually can be time-consuming and may lead to errors.

To overcome this problem, Excel provides a powerful automation tool called Macros. Macros help users automate repetitive tasks by recording a sequence of actions and replaying them whenever required. This unit introduces the concept of macros, their purpose, and their importance in improving productivity.

While studying this unit, think about real-life situations such as generating monthly reports, formatting attendance sheets, or applying the same calculations repeatedly. Macros make such tasks faster, easier, and more accurate.

17.2. OBJECTIVE

After studying this unit, you will be able to:

- Understand the concept of macros in Excel
- Explain the need for automation in spreadsheets
- Record simple macros using Excel

NOTES

- Run macros to perform repeated tasks
- Understand how macros improve efficiency and productivity

17.3. UNDERSTANDING MACROS AND AUTOMATION

A **Macro** is a recorded set of instructions that tells Excel to perform a series of actions automatically. When a macro is created, Excel records every step performed by the user, such as clicking buttons, entering data, or applying formatting. These steps are saved and can be replayed at any time.

Macros are mainly used for **automation**, which means performing tasks automatically instead of doing them manually. Automation helps reduce human effort, save time, and ensure consistency in work.

Why Macros Are Useful

Macros are useful because they:

- Save time by automating repetitive tasks
- Reduce manual errors
- Ensure consistency in formatting and calculations
- Improve productivity in large and complex spreadsheets

Examples of Macro Usage

- Automatically formatting monthly reports
- Applying the same calculations to multiple worksheets
- Generating standardized invoices or attendance sheets
- Cleaning and organizing data repeatedly

Macros are especially useful in offices, educational institutions, and business environments where similar tasks are performed regularly.

17.3.1. Recording a Macro

Recording a macro means capturing a sequence of actions performed in Excel and saving them so that the same steps can be repeated automatically. Excel records actions such as formatting cells, entering data, or applying formulas.

Steps to Record a Macro

1. Click on the **View** tab (or **Developer** tab, if enabled).
2. Select **Record Macro**.
3. Enter a name for the macro.
4. Choose where to store the macro (This Workbook is commonly used).
5. Click **OK** and perform the required actions.
6. Click **Stop Recording** once the task is completed.

After recording, the macro can be run anytime to repeat the same actions automatically.

17.3.1.1. Running and Editing Macros

Running a Macro

Macros can be run using:

- The **View** → **Macros** → **View** Macros option
- A keyboard shortcut (if assigned)
- A button placed on the worksheet

Editing a Macro

Macros are written in **VBA (Visual Basic for Applications)**. Users can edit macros to make changes or improve functionality.

Editing helps:

- Modify recorded steps
- Add conditions
- Improve automation

Basic users generally record macros, while advanced users edit them.



Fig. 17.1 : Recording, running, and managing macros in Excel.



Activity 17.1.

1. Open a new Excel worksheet.
2. Click Record Macro and name it Format_Report.
3. Apply bold formatting to the first row.
4. Change the background color of the header row.
5. Stop recording.
6. Clear formatting and run the macro again.
7. Observe how formatting is applied automatically.

Objective : To practice recording and running a macro.

NOTES

☒ **Check Your Progress 17.1.**

Notes : (a) Space is given below for your answer.
(b) Check your answer with the one given at the end of this unit.

1. What is a macro in Excel?
.....
.....
.....
2. Why are macros useful?
.....
.....
.....
3. What happens when you stop recording a macro?
.....
.....
.....
4. Which language is used to write macros in Excel?
.....
.....
.....

17.4. MANAGING MACRO SECURITY

Macros are powerful tools that automate tasks in Excel, but they can also pose security risks if they come from untrusted sources. A macro can contain code that may change or delete data, or in rare cases, harm the system. Therefore, Excel provides **macro security features** to protect users while allowing safe automation.

Macro security helps users decide **when and how macros should run**. Excel normally disables macros by default and displays a security warning when a macro-enabled workbook is opened. This ensures that users consciously choose whether to allow macros to run. Managing macro security correctly is important to maintain data safety and system reliability.

17.4.1. Enabling and Disabling Macros

When a macro-enabled workbook is opened, Excel displays a **Security Warning** with an option to enable or disable macros.

Enabling Macros

Macros can be enabled when:

- The file comes from a trusted source
- The macro is created by the user
- The task requires automation

Steps to enable macros permanently:

1. Click **File** → **Options**
2. Select **Trust Center** → **Trust Center Settings**
3. Choose **Macro Settings**
4. Select an appropriate option (e.g., Disable all macros with notification)

Disabling Macros

Macros should be disabled when:

- The source of the file is unknown
- The file is received via email from an unverified sender

17.4.1.1. Best Practices for Using Macros

Macros are very useful, but they must be used carefully to avoid security risks and data loss. Following best practices ensures that macros improve productivity without causing problems.

Some important best practices for using macros are:

- Always enable macros only from **trusted sources** such as your own files or known organizations.
- Avoid running macros from **unknown email attachments or downloaded files**.
- Keep **macro security settings** enabled with notifications, so Excel asks permission before running macros.
- Use **clear and meaningful macro** names so their purpose is easily understood.
- Add **comments or notes** inside macros (if editing) to explain what the macro does.
- Test macros on **sample data** before using them on important or confidential data.
- Always **save a backup copy** of your workbook before running a macro.
- Disable macros after use if they are no longer required.

By following these practices, users can safely use macros while protecting their data and system.

17.4.2. Importance of Macros in Productivity

Macros play an important role in improving productivity by automating repetitive and time-consuming tasks. Tasks that normally take several minutes or hours can be completed in seconds using macros.

Macros improve productivity in the following ways:

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- **Save time** by repeating the same steps automatically
- **Reduce human errors** caused by manual work
- **Ensure consistency** in formatting and calculations
- **Simplify complex** tasks into one-click operations
- **Improve efficiency** in report generation and data processing

For example, a macro can automatically format monthly reports, apply formulas, generate summaries, or clean raw data. In offices, schools, and industries, macros help employees focus more on analysis and decision-making rather than repetitive work.

Thus, macros transform Excel from a simple spreadsheet tool into a powerful automation and productivity platform.

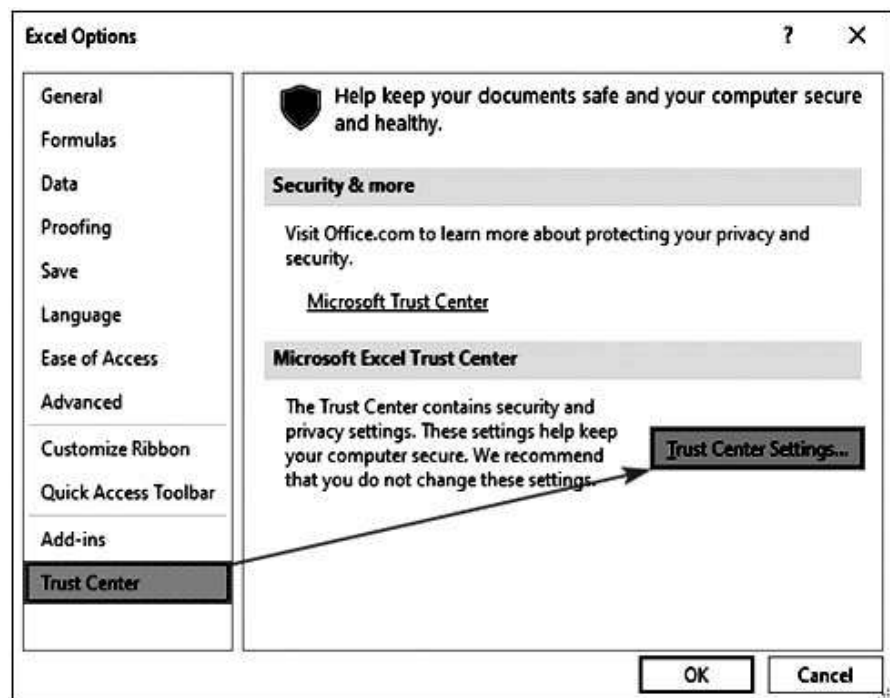


Fig. 17.2: Macro security settings and productivity through automation in Excel



Activity 17.2.

1. Open an Excel workbook and record a simple macro to format a header row.
2. Save the file as a macro-enabled workbook (.xlsm).
3. Close and reopen the file and observe the security warning.
4. Enable macros and run the macro.
5. Discuss:
 - Why Excel shows a security warning
 - How the macro saves time compared to manual formatting

Objective: To understand macro security and how macros improve productivity.

✓ Check Your Progress 17.2.

Notes : (a) Space is given below for your answer.

(b) Check your answer with the one given at the end of this unit.

1. Why does Excel display a security warning for macros??

.....

2. When should macros be enabled?

.....

3. Mention one best practice for using macros safely.

.....

4. How do macros improve productivity?

.....

NOTES**17.5. SUMMARY**

This unit introduced the concept of **macros in Excel** and explained how they help automate repetitive tasks. Learners studied macro security management, enabling and disabling macros, and best practices for safe usage. The unit also highlighted the importance of macros in improving productivity by saving time, reducing errors, and ensuring consistency. Overall, the unit emphasized that when used safely and correctly, macros greatly enhance efficiency in professional and academic spreadsheet work.

17.6. GLOSSARY

- **Macro** – A recorded set of instructions used to automate tasks in Excel.
- **Automation** – Performing tasks automatically without manual effort.
- **Macro Security** – Safety settings in Excel that control when macros can run.
- **Trusted Source** – A reliable file or author from whom macros can be safely enabled.
- **VBA (Visual Basic for Applications)** – The programming language used to create and edit macros in Excel.

NOTES

- **Security Warning** – A message displayed by Excel when a macro-enabled file is opened.
- **Productivity** – The ability to complete tasks efficiently with less time and effort.

17.7. ANSWER TO CHECK YOUR PROGRESS-POSSIBLE ONE

Check Your Progress 17.1.

1. **Answer** : A macro is a recorded set of instructions used to automate tasks in Excel. It repeats actions automatically.
2. **Answer** : Macros save time and reduce repetitive manual work. Automation improves efficiency.
3. **Answer** : Excel saves the recorded steps as a macro. The macro can then be run anytime.
4. **Answer** : VBA (Visual Basic for Applications). VBA is the programming language behind Excel macros.

Check Your Progress 17.2.

1. **Answer** : Excel displays a security warning to protect users from harmful or unknown macro code. Macros can change or delete data, so Excel asks for permission before running them.
2. **Answer** : Macros should be enabled only when the file comes from a trusted source. Trusted sources reduce the risk of security threats.
3. **Answer** : Always take a backup before running macros. A backup prevents data loss if something goes wrong.
4. **Answer** : Macros automate repetitive tasks and save time. Automation reduces manual effort and increases efficiency.

17.8. SUGGESTED READINGS – OER

Sr. No.	Title	URL	QR Code
1	Open Educational Resource	http://books.aisectonline.com/User/UnitUrls?unitId=3741	

17.9. REFERENCE

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17.10. EXERCISE

Part 1

A. Multiple Choice Questions

1. A macro in Excel is used to:
 - (a) Store data
 - (b) Automate repetitive tasks
 - (c) Create charts
 - (d) Protect worksheets
2. Which language is used to write macros in Excel?
 - (a) C
 - (b) Java
 - (c) VBA
 - (d) Python
3. When a macro-enabled file is opened, Excel shows:
 - (a) Print preview
 - (b) Security warning
 - (c) Formula bar
 - (d) Status bar
4. Which file extension is used for macro-enabled workbooks?
 - (a) .xlsx
 - (b) .xls
 - (c) .docx
 - (d) .xlsm
5. Which option allows assigning a macro to a button?
 - (a) Page Layout
 - (b) Developer Tab
 - (c) View Tab
 - (d) Data Tab

NOTES

Answers with Explanation :**1. (b) Automate repetitive tasks**

Explanation : Macros record and repeat a sequence of actions automatically, saving time and reducing manual effort.

2. (c) VBA

Explanation : VBA (Visual Basic for Applications) is the programming language used by Excel to create and edit macros.

3. (b) Security warning

Explanation : Excel displays a security warning to protect users from potentially harmful macro code.

4. (d) .xlsm

Explanation : Excel files containing macros must be saved with the .xlsm extension to store macro code.

5. (b) Developer Tab

Explanation : The Developer tab provides controls to insert buttons and assign macros for easy execution.

B. Small Answer Type Questions :

1. What is a macro in Excel?
2. Why are macros used?
3. What is macro recording?
4. What is VBA in Excel?

Part- 2**C. Long Answer Type Questions (200 words)**

1. Explain the process of recording and running a macro in Excel.
2. Describe macro security settings and best practices for safe macro usage.

Part 3**D. Long Answer Type Questions (300 words)**

1. Discuss the importance of macros in improving productivity in educational institutions and business organizations.
2. Explain how automation using macros reduces errors and saves time in spreadsheet applications.



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SLM FEEDBACK FORM

PROGRAMME : _____

COURSE : _____

BLOCK : _____

UNIT : _____

Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill up and send us the following questionnaire, which pertains to this block. If you find the space provided insufficient, kindly use a separate sheet.

Please mail to aisectcontent@aisect.org / for online submission please scan QR code:

Questionnaire

1. Name : _____

2. Enrolment No. :

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3. How many hours did you need for studying the units? :

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4. Please give your reactions to the following items based on your reading of the block:

Items	Excellent	Very Good	Good	Poor	Give specific Examples (If poor)
Presentation Quality					
Language and Style					
Illustrations					
Used (diagrams, tables, etc.)					
Conceptual Clarity					
Check Your Progress Questions					
Suggested Readings - OER					

5. Any other comments:
