# **CHAPTER - 4**

# INTRODUCTION TO MICROSOFT EXCEL

#### **OBJECTIVES OF THIS LESSON**

MS-Excel is a spreadsheet package which organizes various types of data. It offers enormous features. This lesson is aimed to make you understand the following:

- Introduction of MS Excel
- Features of MS Excel
- Basic concepts of MS- Excel i.e. Rows, Columns, Cell etc.
- Applications of Spreadsheet
- Various Menu and Toolbar options
- Creating worksheet
- Opening worksheet
- Saving worksheet
- Basic operations on worksheet

#### STRUCTURE OF THIS LESSON

- 4.1 Introduction
- 4.2 Features of Ms-Excel
- 4.3 Applications of a Spreadsheet
- 4.4 Starting Ms-Excel
- 4.5 Basic Terms in Excel
- 4.6 Ms- Excel Window Elements
- 4.7 Menu
- 4.7.1 File Menu
- 4.7.2 Edit Menu
- 4.7.3 View Menu
- 4.7.4 Insert Menu
- 4.7.5 Format Menu
  - 4.7.6 Tools Menu
  - 4.7.7 Data Menu
  - 4.7.8 Windows Menu
  - 4.7.9 Help Menu
- 4.8 Creating, Opening and Saving Workbook/Worksheet
- 4.8.1 Creating a New Workbook
- 4.8.2 Opening a Workbook
- 4.8.3 Saving a Workbook
- 4.8.4 Closing a Workbook
  - 4.9 Basic Operations on Worksheet

Summary of the Lesson Self Assessment Questions and Exercises

#### Remarks

#### 4.1 INTRODUCTION

#### Remarks

Microsoft Excel is a spreadsheet package, which organizes all types of data especially numerical data. It is a tool for not only storing or managing data but also analyzing and querying data. A spreadsheet offers considerable ease of performing such tasks by automating all arithmetic calculations and making it easier to change certain numerical values. Spreadsheet is a primary document which consists of cells that are organized into columns and rows. Excel not only does accounts related work but it is cool graphical user interface and user friendliness, even while doing some sophisticated tasks. Working in spreadsheets saves a lot of time.

### 4.2 FEATURES OF MS-EXCEL

Some of the features of MS-Excel are:

- 1. Data can be manipulated in tabular form.
- 2. Excel contains workbooks, in which worksheets are present. Each worksheet consists of 256 columns and 65536 rows.
- 3. Data from excel can be exported to other compatible software.
- 4. Excel supports charts and graphs for pictorial representation of data.
- 5. Excel provides built-in functions to perform calculations.
- 6. This spreadsheet package offers many features that helps to handle complex data like goal seek, what-if analysis.
- 7. Allows to automate the work using macros.
- 8. Support powerful printing features.
- 9. Allows to sort the data on one or more columns.
- 10. Provides features like autolist, find and replace etc for effective data entry.

#### 4.3 APPLICATIONS OF SPREADSHEET

Some of the applications of spreadsheet are:

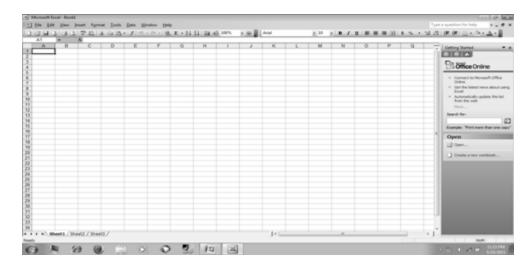
- 1. Payroll management.
- 2. Inventory management.
- 3. Income statements preparation.
- 4. Financial institution can use such spreadsheet packages to manage their receipts and payments.
- 5. Budget control.
- 6. Annual report of an organization
- 7. Scientific Calculation.
- 8. Educational Institutions use spreadsheet to keep the records of different students.
- 9. Banking and other financial services.

4.4

10. Cost- effective analysis.

#### STARTING MS-EXCEL

- Click on Start button
- Select the option Programs
- Click on Microsoft Excel MS-Excel window will appear



Remarks

# (a) ROWS

#### 4.5 BASIC TERMS IN EXCEL

All the rows are numbered numerically i.e. 1, 2, 3.... and so on. There are 65536 rows in each spreadsheet. We can insert a new row by clicking on insert menu. We can also do formatting on rows.

#### (b) COLUMNS

All the Columns are labeled alphabetically i.e. A, B, C.... and so on. There are 256 columns in each worksheet. We can change the width of column. We can also do formatting on columns.

#### (c) Cell

Intersection of a row and a column is called cell. It contains Text or Numbers. We can apply

formatting on cells. We can also insert or delete cells. The active cell has a dark outline. When a cell is active, data can be typed into it.

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#### (d) Range Of Cells

Many spreadsheet operations consists a range of cells instead of a single cell. A range of cells may involve many cells and entering every individual cell address for performing an

operation on them may be time taking. To resolve this problem, the concept of cell ranges is used. These are of following types:

- 1. **Row Range:** It includes a set of adjacent cells in the same row. For example, the range B5...D5 refers to the cells B5, C5 and D5.
- 2. **Column Range:** It includes a set of adjacent cells in same column. For example, the range C5..C9 refers to the cells C5, C6, C7, C8, and C9.
- 3. **Block Range:** It includes a set of adjacent cells in a rectangular group of cells. For example, the range B5.. D9 refers to the cells B5, B6, B7, B8, B9, C5, C6, C7, C8, C9,D5, D6, D7, D8, and D9.

#### (e) Cell Contents

types

In spreadsheets, different types of data can be entered in a cell. The four commonly used of cell data are:

- 1. Label: A label is any string of alphanumeric text. Label can be used to enter either alphanumeric values in cells, or descriptive data or titles to make the contents easier to understand.
- 2. Numeric value: A numeric value is a number on which spreadsheet can perform calculations.
- **3.** Formula: A formula may include numbers, mathematical operators, mathematical functions supported by spreadsheet and cell addresses.
- 4. Date and time: Date and/or time contents type in a spreadsheet are used to display the actual date and time.

#### (f) Cell Referencing

Reference to a cell can be done in three ways:

1. Relative referencing

The copied formula presents the positional relationship among the cells and this type of referencing is called Relative referencing. For example, suppose the cell E5 contain the formula = B5+C5+D5. Excel provides the facility to copy the content of a cell or group of cells. If the formula in E5 is copied to E10, Excel copies it as B5+C5+D5.

#### 2. Absolute referencing

Referring to the value in a cell rather than the position of the cell is called Absolute referencing. For example, suppose D5 contain the formula = C3\*12. We wish to copy the formula to cell D6, such that it appears as =C3\*12 in this cell. If C3 is taken as a relative address then the copy of the formula to the cell D6 will be C4\*12.

MS-Excel uses \$ (dollar) symbol to distinguish absolute and relative referencing. To make the relative reference "C3" as absolute " $C^{3}$ " will have to be typed in formula in D5. So we type the formula in D5 as =  $C^{3}$ " L. Absolute reference remains unchanged when that is copied.

#### 3. Mixed referencing

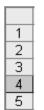
In the example of absolute referencing, "\$C\$4" makes both the row and column absolute. On the other hand "C\$4" or "\$C4" are treated as half relative and half absolute and this type of referencing is known as Mixed referencing.

#### (g) Column Headings



Each Excel spreadsheet contains 256 columns. Each column is named by a letter or combination of letters.

#### (h) Row Headings



Each spreadsheet contains 65,536 rows. Each row is named by a number.

#### (i) Name Box

This shows the address of the current selection or active cell.

#### (j) Workbooks and Worksheets

A **workbook** automatically shows in the workspace when you open Microsoft Excel 2003. Each workbook contains three **worksheets**. A worksheet is a grid of cells consisting of 65,536 rows by 256 columns. Spreadsheet information-text, numbers, or mathematical formulas is entered in the different cells.

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#### (h) Navigation Buttons And Sheet Tabs

#### I → I Sheet1 / Sheet2 / Sheet3 /

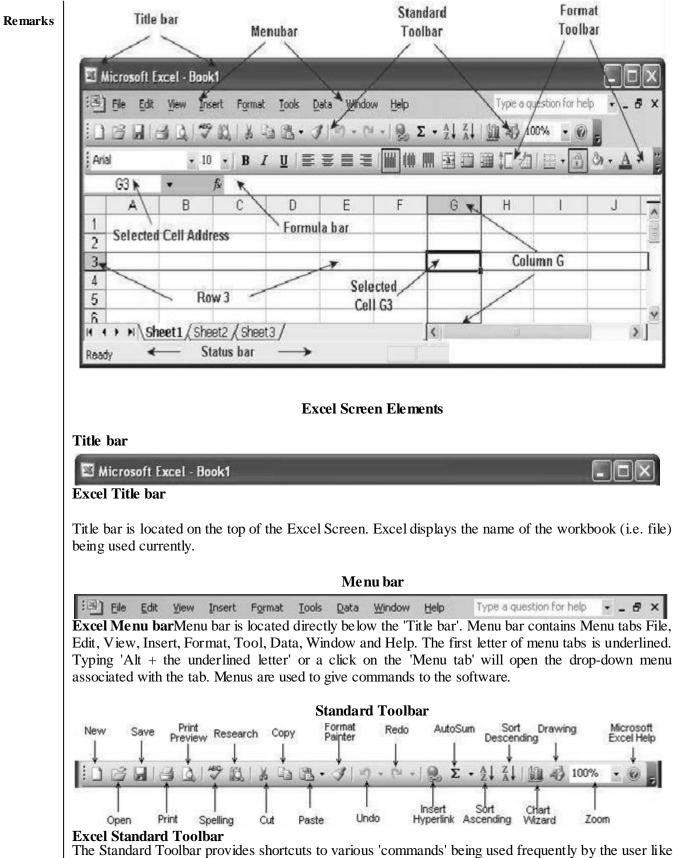
Navigation buttons allow you to move to another worksheet in an Excel workbook. They are used to display the first, previous, next, or last worksheets in a workbook.

Sheet tabs separate a workbook into specific worksheets. A workbook defaults to three worksheets. Each workbook must contain at least one worksheet.

#### 4.6 MS- EXCEL WINDOW ELEMENTS

#### The following figure shows the various components of MS Excel.

Remarks

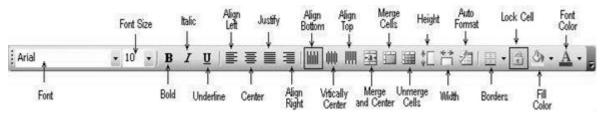


The Standard Toolbar provides shortcuts to various 'commands' being used frequently by the user like opening or a creating workbook (file), opening, Saving, printing a workbook, Print preview, Cut, Copy, Paste, Undo, Redo, Sum, Sort Ascending, Sort Descending the contents of selected cells, Zoom

etc. On moving the mouse over the icons on the tool bar, the command associated with the icon is displayed in a pop up.

- New: to create a new workbook.
- Open: to open an existing workbook.
- Save: to save a workbook. If it is for first time, excel will ask for file name and location to save.
- Print: to print a excel file. Print command could print worksheet or workbook.
- Print preview: using this, we can preview worksheet/workbook before printing.
- Spell Check: spell check feature is used to correct errors.
- Research: this feature is used to find words and their meaning.
- Cut : used to Cut the current selection of text.
- Copy: used to make Copy of the selected text.
- Paste: Pastes the text that has currently cut or copy by the user.
- Format Painter: used to copy formatting of selected text.
- Undo And Redo: undo will cancel last action and redo will cancel the undo action.
- Insert hyperlink: used to create hyperlink.
- AutoSum and Sorting: by clicking on auto sum, we can have sum of selected range of data and sorting button will sort the data.
- Zoom: helps to change the size of worksheet.

#### **Format Toolbar**



#### **Excel Format toolbar**

Format toolbar provides commands for formatting the cells and its contents, merging / de merging cells, increasing or decreasing height of rows and width of columns, horizontal and vertical aligning of cell contents etc. A user can add or remove icons (commands) to the toolbar as per requirements.

Functionality of commonly used buttons							
Arial 🖌 💌	Changes the font of the selected text	10 -	Changes the size of selected text and numbers				
В	Makes selected text and numbers bold	I	Makes selected text and numbers italic				
Ū	Underlines selected text and numbers		Aligns to the left with a ragged right margin				
<b>E</b>	Centers the selected text	IIII	Aligns to the right with a ragged left margin				
翻	Merge and Center - Merges two or more selected cells and centers the entry	\$	Currency Style - Formats selected text to display currency style				

%	Percent Style - Formats selected cells to display percent	L	Comma Style - Formats selected cells to display commas in large numbers
*.0	Increase Decimal - Increases the number of decimals displayed after the decimal point	.00 ≁.0	Decrease Decimal - Decreases the number of decimals displayed after the decimal point
t.	Decreases the indent to the previous tab stop		Indents the selected paragraph to the next tab stop
	Adds or removes a border around selected text or objects	2 -	Marks text so that it is highlighted and stands out
<u>A</u> -	Formats the selected text with the color you click		

#### Formula Bar

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Exc	el Formi	ula Bar		

Formula bar has Name box on the left to display the address of the selected cell. The other box on the formula bar displays number, text, formula or other contents of the selected cell. You can enable or disable display of the **Formula bar** by clicking on **View** followed adding or removing check mark against **Formula bar**.

#### Status bar

Ready	NUM	FIX
Excel Status bar		

The Status bar is located at the bottom of the Excel screen. The bar displays status of the window on the left. The word 'Ready' indicates that Excel is in the Ready mode and is awaiting your next command. Other indicators appear on the Status bar in the lower right corner of the screen are:

- The letters "NUM" on the Status bar in the lower right corner of the screen indicate that the **Num Lock** is on.
- The letters "CAPS" on the Status bar in the lower right corner of the screen indicate that the **Caps Lock** is on.
- The letters "SCRL" on the Status bar in the lower right corner of the screen indicate that the **Scroll Lock** is on.
- The letters "END" on the Status bar in the lower right corner of the screen indicate that the **End** key is on.
- The letters "EXT" on the Status bar in the lower right corner of the screen indicate that the **Extension** of selected cell / range is on. Pressing F8 key anchors a cell / range for extension by pressing arrow keys and repressing F8 key removes the anchor.

A right click on the **Status bar** displays Sum, Average, Count, Maximum or Minimum of the selected cells. You can enable or disable display of the **Status bar** by clicking on **View** followed adding or removing check mark against **Status bar**.

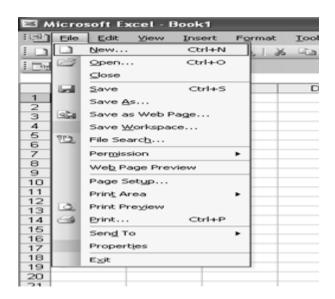
#### 4.7 Menu

The Menu Bar is directly below the Title bar and displays the menu. The menu begins with the word File and continues with the following: Edit, View, Insert, Format, Tools, Data, Window, and Help. You use the menu to give instructions to the software. Point with your mouse to a menu option and click the left mouse button. A drop-down menu will appear. You can now use the left and right arrow keys on your keyboard to move left and right across the Menu bar options. You can use the up and down arrow keys to move up and down the drop-down menu. To select an option, highlight the item on the drop-down menu and press Enter.

# 4.7.1 File Menu

The File menu contains a number of options, which are following:-

- New Opens a new document.
- Open Opens a previously saved document.
- Close Closes the active document but does not quit the application.
- Save Saves the active document with its current file name, location and format.
- Save As Saves by opening a window which gives the opportunity to change the file name, location or format.
- Page Setup Sets margins, paper size, orientation and other layout options
- Print Preview Shows how the file will look when you print it.
- Print Prints the active file, also gives the opportunity to change print options.
- Exit Closes Microsoft Excel

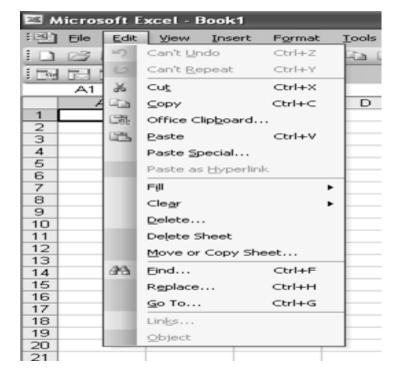


#### 4.7.2 Edit Menu

The edit menu contains a number of options, which are following:-

- Undo The actual entry of this item will depend on what you did last. As an example something is typed, so that was displayed. This selection can be repeated several times.
- Redo After an action has been undone, it can be reinstated in the document.
- Cut Removes the selection from the active document and places it on the clipboard.
- Copy Copies the selection to the clipboard, the cell from which information is copied remains highlighted.
- Paste Inserts the contents of the clipboard at the insertion point (cursor) or whatever is selected.

- Paste Special Ten choices are available when making this selection; examples include pasting formulas, values, and comments.
- Fill Fill contents of a selected cell Up, Down, Left or Right
- Clear Deletes the selected object or text, but does not place it on the clipboard. Four choices are available; All, Format, Contents or Comments
- Delete This menu entry can be used to delete entire rows or columns.
- Find Searches for specified text in the active document
- Replace Searches for and replaces specified text and formatting.



### 4.7.3 View Menu

The View menu contains a number of options, which are following:-

- Normal The default document view for most word processing tasks.
- Page Break Preview Before printing, make sure the page breaks appear where you want them
- Toolbars Displays or hides toolbars. The right pointing arrow indicates a list of toolbars. To add one slide down to the name of the toolbar and click to select.
- Formula Bar Remove or display the bar which displays cell address and data entered into the active cell
- Header and Footer Adds or changes the text that is displayed at the top or bottom of every page of the document
- Comments Hidden comment give further information about cell contents. Comments are displayed when you move the cursor into the cell, however this command causes all comments on a page to be displayed.
- Full Screen Hides most screen elements so you can see more of your document
- Zoom Controls how large, or small, the current document appears on the screen.

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#### 4.7.4 Insert Menu

The Insert menu contains a number of options, which are following:-

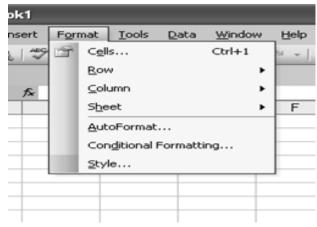
- Cells Use this command to insert a cell. A pop-up window allows you to move existing data down or to the right. You can also insert rows or columns with this window.
- Rows Inserts a new row in the spreadsheet, above the row that contains the active cell.
- Columns Inserts a new column in the spreadsheet, to the left of the column that contains the active cell.
- Worksheet By default, an Excel workbook is made up of three worksheets. we can insert as many additional sheets as required. Sheets are inserted in front of the current worksheet.
- Chart This adds a chart of the selected data, or of the entire worksheet if you have no data selected.
- Page Break Inserts page breaks above and to the left of the active cell. To avoid adding a page break to the left, make sure a cell in Column A is selected before inserting the break.
- Function Opens the Paste Function window allowing the selection of a specific equation to go in the active cell.
- Comment- Have something to say about the contents of a cell? Add a small note with the appearance of a Post-It note.
- Picture Insert pictures from clip art or a file. You can also insert auto shapes, word art, or a chart.
- Object Insert an object such as clip art, word art, an equation or much more.
- Hyperlink it is used to link worksheet to another worksheet or document.

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#### 4.7.5 Format Menu

The Format menu contains a number of options, which are following:-

- Cells Format the way a number is displayed, alignment of data in the cell(s), font (size, color, style, etc.), borders and colors for the selected cells, and you may also lock the contents of a cell here.
- Row Specify a row height, choose auto-fit, and hide or un hide the selected row.
- Column Specify a column width, choose auto-fit, hide or un hide the selected column, or choose the standard width for a column.
- Sheet Here we can rename the sheet if sheet 1 is not descriptive enough (and it's not), you can hide or un hide a sheet, or you can tile an image in the background of the entire sheet.
- Auto Format- There are sixteen pre-designed formats to change the look of your spreadsheet. You may apply the format to the entire sheet or only to selected cells.
- Style Opens a Style window which will lead to the Format Cells window if you wish to Modify the format.



#### 4.7.6 Tools Menu

The Tool menu contains a number of options, which are following:-

- Spelling... Check spelling in your document
- AutoCorrect... Define, or turn off automatic corrections.
- Share Workbook... Choose this option if we want several users to work on the data in the same workbook simultaneously. Make it available on network and anyone with access can make changes.
- Protection we can password protect a single sheet of a workbook, or the entire workbook. One obvious application would be to protect a worksheet which you are using as your grade book.
- Customize... Select/Deselect toolbars to be displayed within workbook, or add buttons to existing toolbars.
- Options... This is where you turn those features on or off.

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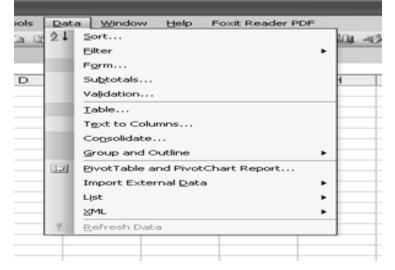
#### 4.7.7 Data Menu

- Sort the sort command is very important as it allows you to sort (rearrange) your data either in ascending or descending order making it an important command especially when you want to analyze your data.
- Filter use this command to extract data or a range of data you want from your worksheet. There are two types of filters, normal filter and advanced filter.
- Form this command turns the selected data into a form that you can use for printing or that can be used online.
- Subtotals we can use this command to calculate the subtotals of subtitles you may be having and the grand total of your data.
- Validation this command is used for setting restrictions on the data type that can be entered in a worksheet, for instance you can set a validation criteria where the data entered will be

#### Remarks

between 20 and 100. This will imply that only numbers between 20 and 100 can be entered on the restricted cells.

- Text to columns we will not believe this, that this command can be used to convert text to column in an Excel sheet. The text will be split into individual columns.
- Consolidate this command is useful in combining values from several ranges of data into a unified place.
- Group and online We can use this command to modify your data by grouping data together and also outlining you data.
- Pivot table and pivot chart report pivot tables and pivot reports are used to generate a report that summarizes and analyzes data.
- Import export data use this command to import data from data sources, use it to create a web query, and use it to create a new database query.
- List use this command to create a list and publish it.
- XML use this command while working with XML (Extensible Markup Language) data.



#### 4.7.8 Windows Menu

The Window menu provides different options to move between documents, and these are following:

- New Window used to open new window with same content as the active document consists. So different parts of document can be viewed at the same time.
- Arrange All used to show all open files in separate windows on the screen that makes easy dragging between files.
- Split used to define a split into two panes or removes the split.
- Freeze Pane used to freeze screen.

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#### 4.7.9 Help Menu

The Help menu gives the idea to do something in Excel or how something works. This menu has following options:

- Microsoft Excel Help –used to provide the possible topics related to answer of query typed in subject of question.
- Show Office Assistant it shows an animated paperclip that gives suggestions about what the computer thinks related to the work performed by user on document.
- Microsoft Office Online used to take the user to website with tips on MS Office software.
- About Microsoft Excel it specifies information about Excel i.e license information etc.

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#### 4.8 CREATING, OPENING AND SAVING WORKBOOK/WORKSHEET 4.8.1 Creating a New Workbook

By default, excel document is called a workbook. Workbooks are named as Book1, Book2 and so on. Every workbook contains 3 worksheets. New worksheets can be added anytime in a workbook.

- To create a new workbook, click New button on standard toolbar.
- You can also select New from File menu.
- You can also press Ctrl+ N.

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#### 4.8.2 Opening a Workbook Remarks

#### To Open an existing workbook, click Open button in on standard tool bar. •

- You can also select Open from File menu.
- You can also press Ctrl+ O. •

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# 4.8.3 Saving a Workbook

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on standard tool bar.

You can also click Save from File menu. •

To save the document, click Save button

- You can also press Ctrl+S. •
- A dialog box will appear. •
- Save the document with name and extension. •

Following are the extensions for excel document saving:

- 1. .xls: saving a workbook.
- 2. .xlw: saving workspace.
- 3. .xlt: template.
- 4. .xlk: backup file.

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#### 4.8.4 Closing a Workbook

Steps to close a workbook are:

- Choose close from File menu to close active workbook.
- We can also press close on right side of menu bar.

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Steps to close excel are:

- To quit excel, choose Exit from File menu.
- We can also click on close button on right side of title bar.

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#### 4.9 BASIC OPERATIONS ON WORKSHEET

#### Moving through cells

While working in the worksheet we can use mouse to select a specific cell or row. We can also use keyboard to move through cells in a worksheet.

- To move to the next cell, press the Arrow Keys.
- To move to the next cell to the right, press TAB.

- To move to the next cell to the left, press SHIFT + TAB.
- To move to the edge of a data region, press CONTROL + Arrow Keys.
- To move to the first cell in the row, press HOME.
- To move to the first cell, press CONTROL + HOME.
- To move to the last cell, press CONTROL + END.
- To scroll down, press PAGE DOWN.
- To scroll up, press PAGE UP.
- To scroll to the right, press ALT + PAGE DOWN.
- To scroll to the left, press ALT + PAGE UP.
- To move to the next worksheet, press CONTROL + PAGE DOWN.
- To move to the previous worksheet, press CONTROL + PAGE UP.
- To go to a cell using the "Go To" dialog box, press F5 to open the "Go To" dialog box, type the cell co-ordinates in the Reference box and press ENTER.

## Adding Worksheets

- Click on Insert menu $\rightarrow$  Worksheet.
- Rename new worksheet.

### Adding Rows

- Select the cell.
- Click on Insert menu $\rightarrow$  Row
- A new row will be inserted above the selected cell.

### Adding Columns

- Select the cell.
- Click on Insert menu $\rightarrow$  Column
- A new column will be inserted before the selected cell.

## Selecting Cells

A cell is to be selected before it is to be used. Single cell can be selected using mouse or keyboard. A group of cells selected is called a range. A range is a rectangular group of cells is referred to by its diagonal corners(top-left cell address and bottom-right cell address separated by a colon). Example A1:C3 implies a rectangle covering all the 9 cells from A1 to C3, i.e. A1, B1, C1, A2, B2, C2, A3, B3 and C3.

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#### Moving cell contents

The contents of a cell can be moved using cut and paste. For this, following are the steps:

Remarks

- Choose the cell to be moved.
- Click on Edit menu $\rightarrow$  Cut.
- Now, go to that position where data is to be moved.
- Click on Edit menu $\rightarrow$  Paste.

#### Copying cell contents

The contents of a cell can be moved using copied and paste. For this, following are the steps:

- Choose the cell to be copied.
- Click on Edit menu $\rightarrow$  Copy.
- Now, go to that position where data is to be copied.
- Click on Edit menu $\rightarrow$  Paste.

### **Drag and Drop Option**

This option can be used to move the cell contents to a short distance. To perform Drag and Drop, simply drag the highlighted border of the selected cell to the destination cell using mouse.

#### Freeze Panes

To make the heading visible at all times in big worksheet, where the heading will disappear as the worksheet is scrolled, freeze panes feature is used. It can be performed by following steps:

- Click the label of the row below the row that should remain frozen at the top of the worksheet.
- To remove the Frozen Panes, select Window→Unfreeze Panes from menu bar The freeze panes will remain stationary while the remaining rows and column will move when worksheet is scrolled.

#### SUMMARY OF THE LESSON

You learnt the following in this lesson:

- MS-Excel is spreadsheet package used to organize data and to perform calculations.
- MS-Excel is used to create the simple database as well as prepare the document for WWW.
- In MS-Excel, a workbook, by default contains three worksheets.
- MS-Excel worksheet has a grid of cells arranged in rows which are numbered and columns which are named with letters for organizing data and performing mathematical operations.
- The content of cell can be activated by double clicking on the cell or by clicking once in the cell and then pressing function key F2.
- Different types of Menu, toolbar and their options are used to format the worksheet.
- Excel toolbars help to use various options such as opening, creating, renaming, merging, moving, formatting, analyzing, saving and printing a worksheet.

#### SELF ASSESSMENT QUESTIONS AND EXERCISES

- 1. Discuss the features of MS-Excel.
- 2. How a worksheet can be created?
- 3. How rows and columns can be added in Excel worksheet?
- 4. Differentiate absolute, reference and mixed referencing in Excel using examples.
- 5. Explain the steps to create, save, open and close workbook.
- 6. State the steps for opening and saving of worksheet.
- 7. How can the content of a cell in MS-Excel be activated?
- 8. State the steps to Move Cells content.
- 9. State the steps to Copy Cells content.
- 10. Write the steps to fill color in a cell.