CHAPTER - 5

WORKING WITH MICROSOFT EXCEL

OBJECTIVES OF THIS LESSON

This lesson is aimed to make you understand the advanced features of MS-Excel. At the end of this lesson the learner should be able to carry out the following the following:

- Formatting and printing of worksheet
- Linking of different worksheets
- Creation and printing of charts or graphs
- Recording and Playing Macros
- Using built-in functions

STRUCTURE OF THIS LESSON

5.1   INTRODUCTION

Previous lesson introduced various components of MS-Excel along with the basic operations that you can perform while working on a worksheet. However, MS Excel provides lot of other features which are very useful for preparing professional worksheets. Such features include formatting, printing, charts, macros and built-in-functions. All these features are discussed in detail in the subsequent sections of this lesson.

5.2   FORMATTING WORKSHEET

You can give professional look to worksheet by formatting it in many ways. Formatting is a process of presenting the data in an effective manner with respect to alignment, font, font size, font color, border pattern etc. There are many ways of formatting the worksheet; few commonly used methods are discussed as follows:

5.2.1 Standard Formatting

To change the font used in a cell or range of cells
- Select the cell or range of cells you wish to change.
- On the Excel **Formatting toolbar** choose a font from the **Font** drop down list.

To change other font characteristics

- Select the cell or range you wish to change.
- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, select the Font tab to change the **Font, font style**, or **size**.
- Select the **Underline:** drop down list box to select a style of underline or None to remove the underlining.
- Select the **Color:** drop down list box to choose a font color.
- In the **Effects** section, you can tick **Strikethrough, Superscript**, or **Subscript**.
- To change all the settings in the dialog box back to the Normal style which is set in the **Style** dialog box, tick the **Normal font** check box.
- Select **OK** to close the **Format Cells** dialog box.

To align data between the left and right sides of a cell
- Select the cell, or cells, you wish to align.
- On the Excel **Formatting toolbar**, click on the **Align Left** icon to align data with the left edge of the cell.
- Click on the **Align Right** icon to align data with the right edge of the cell.
- Click on the **Center** icon to center data in the cell.

To align data between the top and bottom of a cell
- Select the cell, or cells, you wish to align.
- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, click on the **Alignment** tab.
- In the **Text alignment** section, choose the Top, Center, or Bottom option in the **Vertical** area to align the data in the cell.
- To make the lines of data fit evenly within the height of a cell, tick the **Justify distributed** option and click on **OK**.

To change the orientation of data cells
- Select the cell, or cells, you wish to change.

- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, click on the **Alignment** tab.
- In the **Orientation** section, you can change the **Degrees** of the text or use the mouse to drag the 'red small diamond' up or down. When satisfied, click on **OK**.
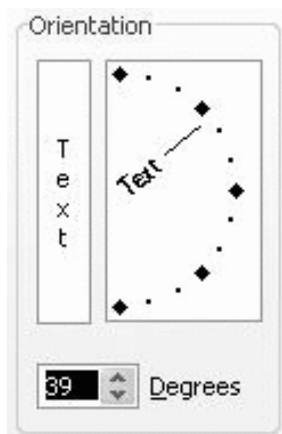
To wrap multiple lines of data in a cell

- Type the data you require into the cell and press **Enter**. The entry will appear as one long line. Select the cell, or cells, you wish to format.
- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, click on the **Alignment** tab.
- In the **Text control** section, tick the **Wrap text** check box and click on **OK**.

To shrink the text into one cell

- Type the data you require into the cell and press **Enter**.
- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, click on the **Alignment** tab.
- In the **Text control** section, tick the **Shrink to fit** check box and click on OK.

To merge several cells

- Select the cells that you wish to merge to become one cell.
- Right-click on the selected cells, click **Format Cells**.
- From the **Format Cells** dialog box displayed, click on the **Alignment** tab.
- In the **Text control** section, tick the **Merge cells** check box and click on **OK**. **Note:** You also can use the **Merge and Center** icon on the Excel **Formatting** toolbar.

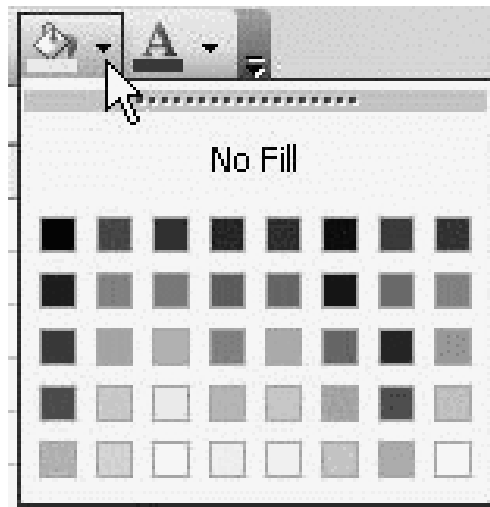### *To change the color of text*

- Select the cells containing the data you want to change the color.
- On the Excel **Formatting** toolbar, click the down arrow next to the **Font Color** icon.
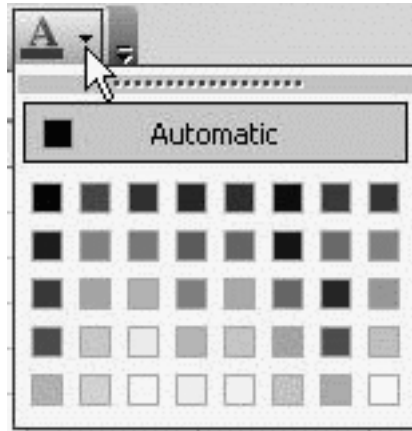
- Choose a color from the **Font Color** palette.
- The color you selected from the **Font Color** palette will be displayed on the new icon face. Click on the icon face to apply the new color to the cell.

To apply colors to cell(s)

- Select the cell or range of cells you wish to color.
- On the Excel **Formatting** toolbar, click the down arrow next to the **Fill Color** icon.
- Choose a color from the **Fill Color** palette.

To turn off the cell(s) color

- Select the cell or range of cells you wish to color.
- On the Excel **Formatting** toolbar, click the down arrow next to the **Fill Color** icon.
- Choose **No fill**.

To change number formatting using the formatting icons

- We can quickly change the formatting of a cell or selected range by using the following icons on the **Formatting** toolbar.

Currency	12345 will become $12,345.00
Percent	.25 will become 25%
Comma	98765 will become 98,765.00
Increase Decimal	12,345.00 will become 12,345.000
Decrease Decimal	98,765.00 will become 98,765.0

To format a number as a currency
- Select the cell or range of cells you want to format.
- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, select the **Number** tab.
- In the **Category:** section, select **Currency**.
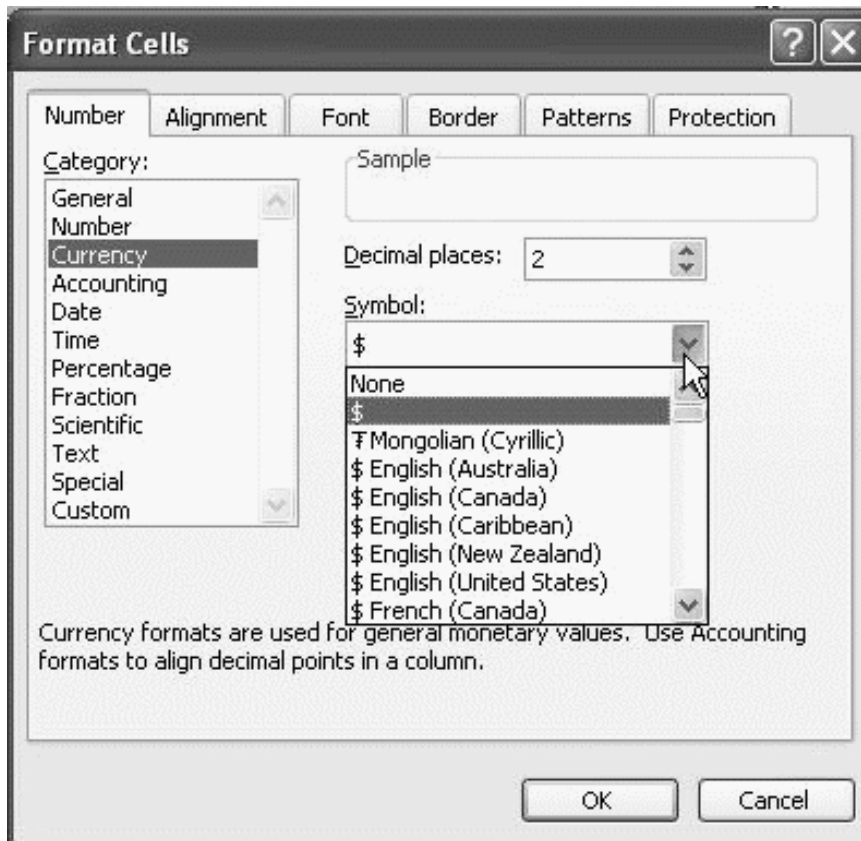
- Select the number of decimal places you require by using the **Decimal places:** spin box arrows.
- In the **Symbol:** section drop down list, select the type of currency.
- Click **OK**.

To format a number as a percentage

- Select the cell or range of cells you wish to format.
- From the **Format** menu, click **Cells**.
- From the **Format Cells** dialog box displayed, select the **Number** tab.
- In the **Category:** section, select **Percentage**.
- Select the number of decimal places you require by using the **Decimal places:** spin box arrows.
- Click **OK**

5.2.2 Conditional Formatting

This feature helps to copy the formatting style from a selected cell to another. To do this, simply copy the cell and paste its format to another cell. We can also copy format to a range of cells. Following are the steps:

- Select the range of cells in the worksheet to which conditional format is to be copied. The cell is to be copied must be the part of the range.
- Select Format menu→ Conditional Formatting.
- A dialog box will appear.
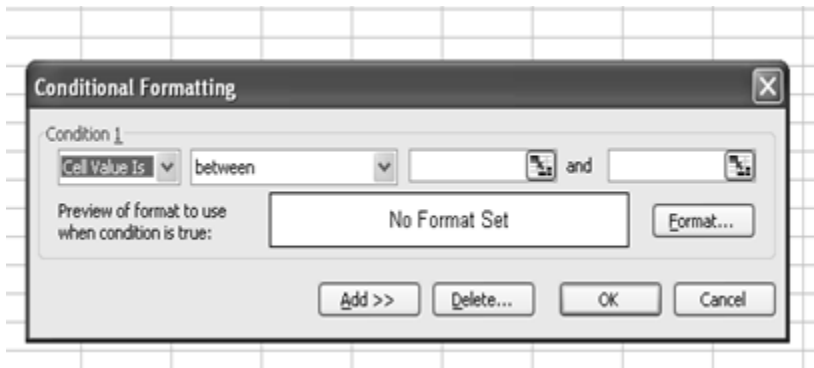
- Fill the required details.

5.2.3 Auto Formatting

This feature is helpful to obtain professional-quality format for data. Auto formats are combinations of formats, such as lines and fills, that Excel applies to the indicated range of cells. Steps for Auto formatting are :

- Select cell(s) in table.
- Click **Format** menu, then click **AutoFormat**.
- Click Premade format in **Table Formats** list, to select the appropriate format.
- Click Ok when done.

5.3   PRINTING WORKSHEET

Before printing the worksheet one needs to make sure that it will appear presentable. For this printout orientation, scaling, margins, header and footer, and page numbering should be setup.

- To Print an active document, click Print button on standard toolbar.
- You can also click Print on File menu.

- You can also press Ctrl+P.
- A dialog box will appear.
- Fill all the necessary information and press OK.
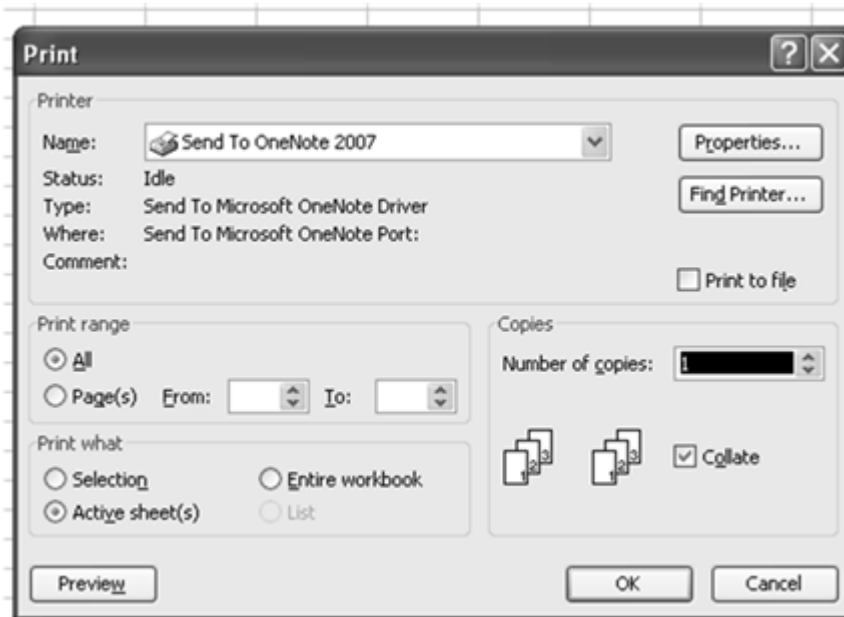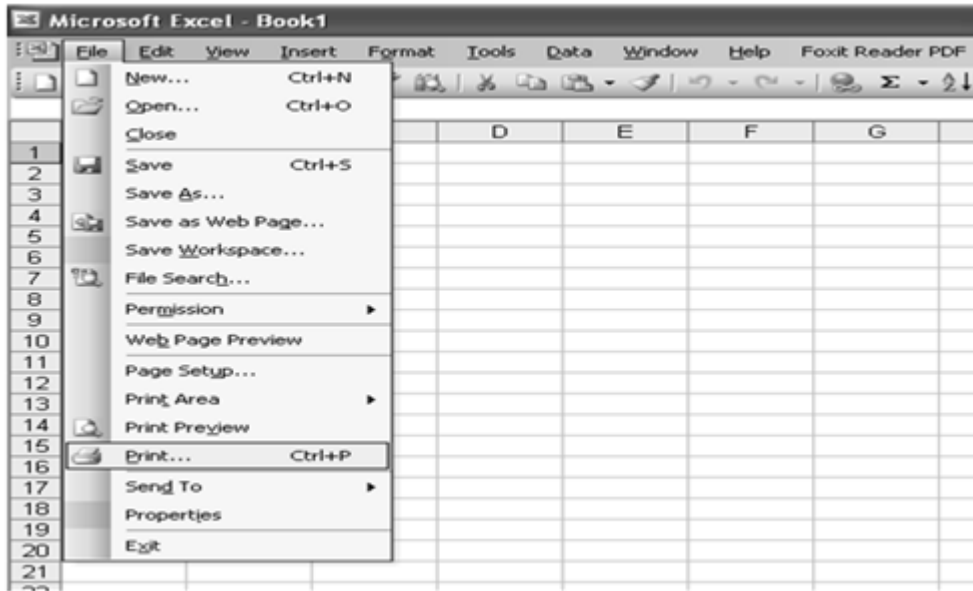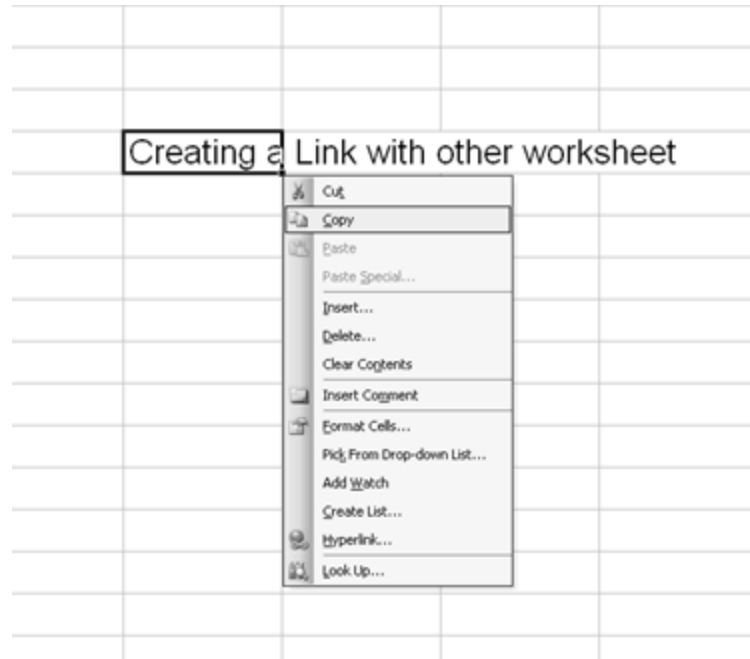

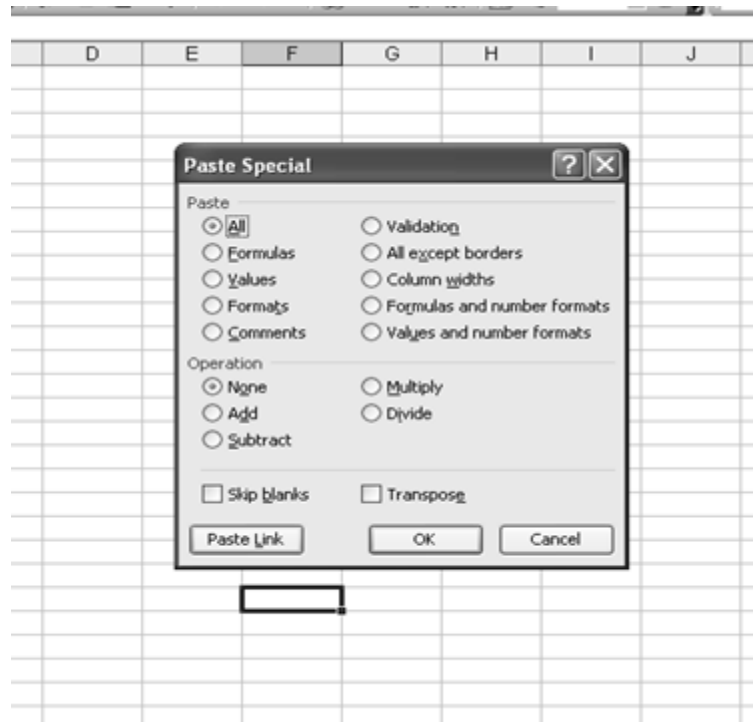## 5.4   ESTABLISHING WORKSHEET LINK

Before creating the link, *format the cell containing the link formula in the destination worksheet* to equal the format of the source data.

1. In the source worksheet, select the cell you want to link to and click the Copy button on the Edit menu. Or press Ctrl+C, or right-click and select Copy.

Creating a Link with other worksheet

✂	Cut
▣	Copy
▣	Paste
	Paste Special...
	Insert...
	Delete...
	Clear Contents
▢	Insert Comment
☞	Format Cells...
	Pick From Drop-down List...
	Add Watch
	Create List...
⊕	Hyperlink...
⚏	Look Up...

2. Switch to the destination spreadsheet and click the cell where you want the link. Then, on the Edit menu, click Paste Special, and then click Paste Link.

Paste Special

Paste
- ● All
- ○ Formulas
- ○ Values
- ○ Formats
- ○ Comments
- ○ Validation
- ○ All except borders
- ○ Column widths
- ○ Formulas and number formats
- ○ Values and number formats

Operation
- ● None
- ○ Add
- ○ Subtract
- ○ Multiply
- ○ Divide

☐ Skip blanks   ☐ Transpose
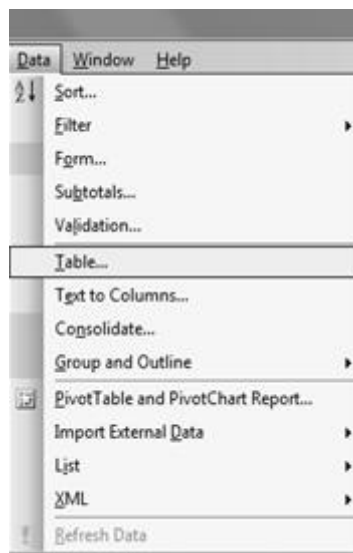
[Paste Link]   [OK]   [Cancel]

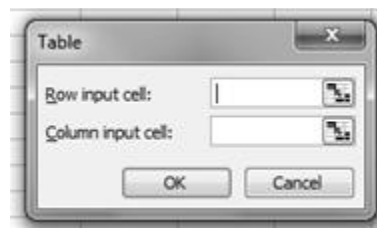3. Return to the source worksheet and press ESC to remove the animated border around the cell.
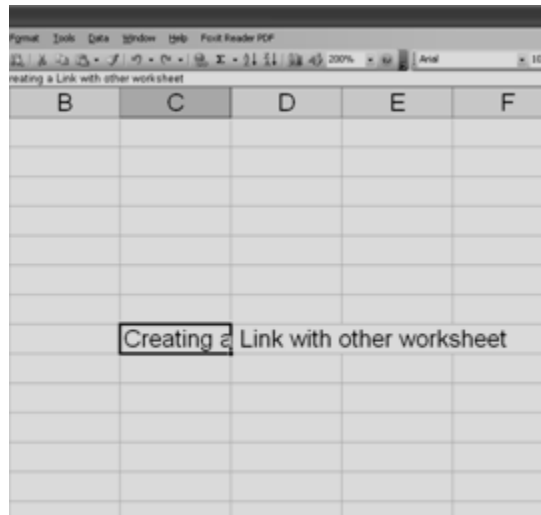
5.5 CREATING A TABLE

- Select a range of rows and columns. This range may contain values or it may be empty.
- Click on Data menu and then choose table.

- A dialog box will appear. Specify number of rows and columns.

5.6   CHARTS (GRAPHS) IN EXCEL

A chart is a graphical representation of the data in your worksheet. You can create an embedded chart, which appears on the worksheet beside the data, or, you can create a chart sheet as a separate sheet in the workbook so that it can be displayed apart from its associated data. Whichever method you choose your chart data is automatically linked to the worksheet from which it was created. If you change the data on the worksheet, the chart will change accordingly.

Excel offers many different chart types, each of which has several subtypes or variations:

- Column
- Bar
- Line
- Pie
- XY (scatter)
- Area
- Doughnut
- Radar
- Surface
- Bubble
- Stock
- Cone
- Cylinder
- Pyramid

5.6.1 Standard Chart Types

The main chart types are as follows (arranged in alphabetical order):

- **Area chart**

  An area chart shows the relative importance of values over a period of time. It is similar to a line chart but emphasizes the amount of change (Magnitude of values) rather than time and the rate of change.

- **Bar chart**

  Bar charts illustrate comparisons between items. Although they are similar to column charts, the categories on a bar chart are displayed vertically and the values are organized horizontally. This concentrates on comparing values and places less emphasis on time. A stacked bar chart shows the relationship of individual items to the whole.

- **Bubble chart**

A bubble chart is a variation on an xy scatter plot. The size of the bubble (data marker) indicates the value of a third variable. Arrange the data with x values in one column (or row) and the corresponding y values and bubble size in the adjacent columns (rows).

- **Column chart**

Column charts can be used to illustrate how data changes over a period of time, and to compare various items. Categories are displayed horizontally, values vertically.

- **Doughnut chart**

Doughnut charts are similar to pie charts but, unlike pie charts, can show more than one data series. Each ring represents one data series. These charts are widely used in the Far East.

- **Line chart**

This shows trends or changes in data over a period of time, at even intervals. A line chart emphasizes time flow and rate of change rather than the amount of change. If you need to show trends or changes in data at uneven or clustered intervals, an xy (scatter) chart is more appropriate.

- **Pie chart**

A pie chart can only show one data series. It compares the size of individual items with the sum of them all.

5.6.2 Creating a Chart
- Choose a range of data for which we want to make a chart.
- Either Click on the Chart Wizard button on the toolbar
 Or
  Select Chart from the Insert menu.

The first Chart Wizard dialog box will appear. The Chart Wizard –
Step 1 of 4 – Chart Type dialog box that appears has two tabs. The popular built-in chart types can be found on the Standard Types tab. Chart types designed by us, the user, and combination charts designed by Excel, can be found on the Custom Types tab.
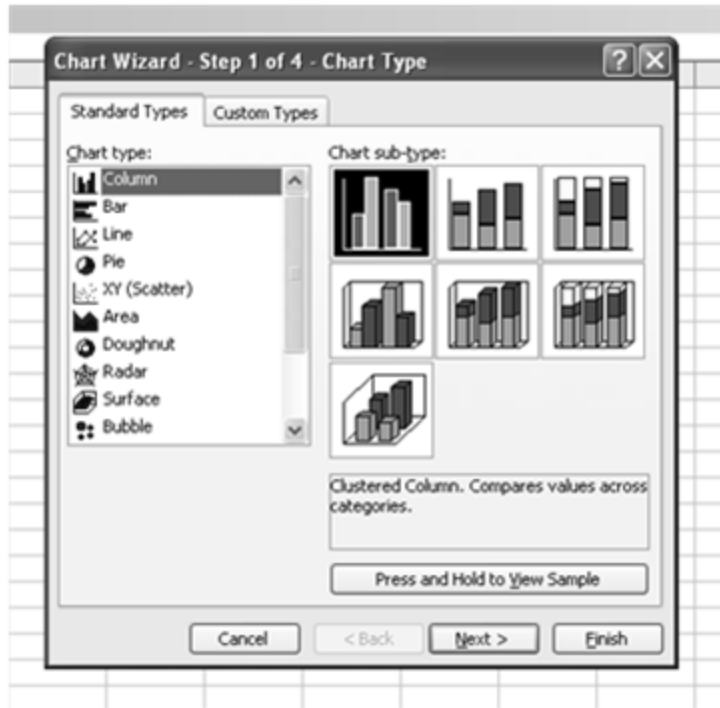
Step 2 of 4 – Specify the data to be plotted i.e. the source of data for which chart is to be created.
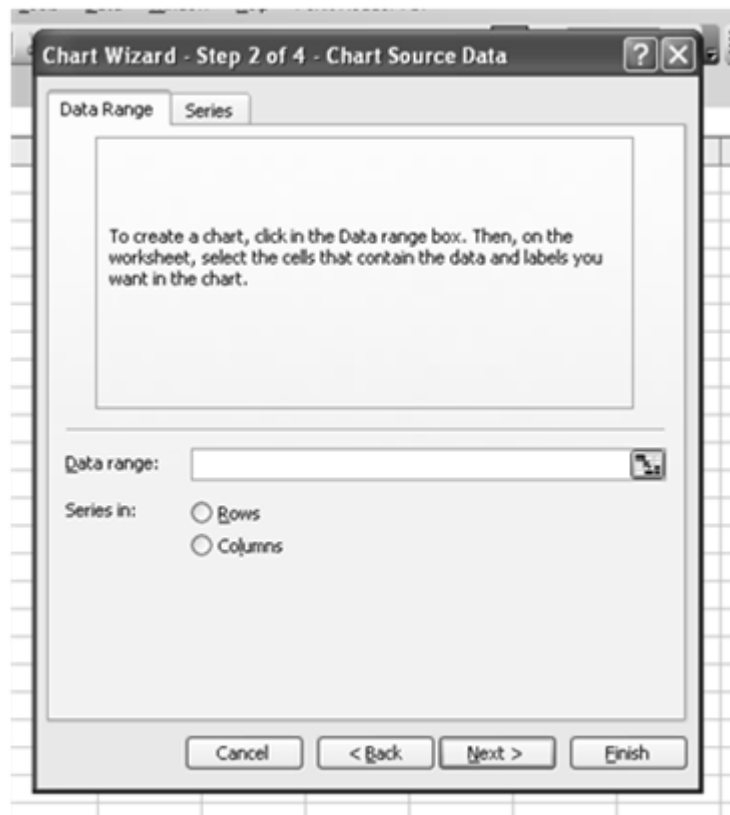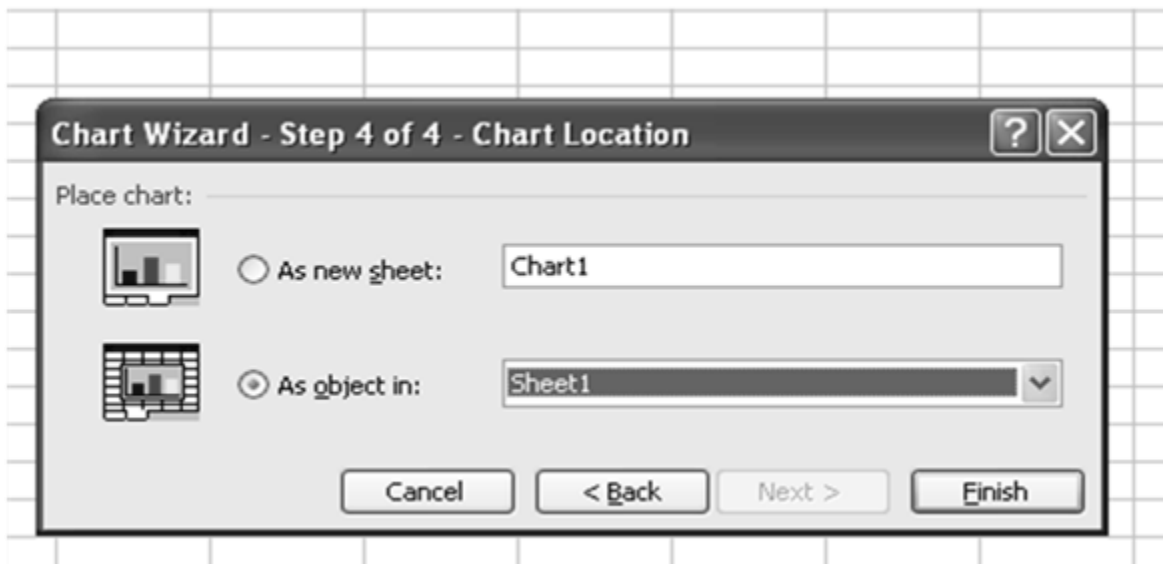
Step 3 of 4 – The number of tabs displayed in the Step 3 – Chart Options window varies, depending on the chart type. Here we have three options— Titles, Legend and Data Labels.

Step 4 of 4 – Specify chart location in window, we can specify where this new chart is to go. You can choose to place the chart.

• As new sheet in which case a chart sheet containing just the chart will be entered in workbook — type a name for the sheet in the adjacent box.

• As object is so that the chart will be placed in an existing worksheet

— the current one where our data is, or a different one (click on the down-arrow to select one).

5.6.3 Adding Graphics

Graphics can easily be added to charts and are a useful way to draw attention to a particular feature or to provide an explanation. We may decide to add an arrow and some text to chart. Whatever we are doing, you should first make sure that the Drawing toolbar is visible:

Select View | Toolbars | Drawing

There are two possible scenarios:

• The graphics are confined to the area of the chart

• The graphics are partly/completely outside the chart area

Adding graphics

- Click on the chart to select it.
- Click on the Arrow button on the Drawing toolbar.
- Draw an arrow on your chart.

If the graphics are confined to the area of the chart, we can move the chart and the arrow will move with it. If the graphics are partly outside the chart area, the arrow will not move with the chart unless we also:

- Select the chart, arrow and text box (using Shift+click).
- Right-click on this selection.
- Select Grouping | Group.
- Click away from the selection.

5.7   PRINTING A CHART

- To print a chart that is on a separate chart sheet, Activate the chart sheet and print as usual.
- To print a chart that is an object on a worksheet

1. Select the chart and choose File | Print — the chart will be printed on its own. Or

2. Select an area of the worksheet containing the chart; choose File | Print and change the Print what setting to Selection — the chart will be printed together with the worksheet cells that were selected.

5.8   MACRO

A macro is a set of instructions that tells Microsoft Excel to perform one or more actions as per user requirements. Macros are like computer programs, but they run completely within Excel. We can use them to automate tedious or frequently repeated tasks.

Macros can carry out sequences of actions much more quickly. For example, we can create a macro that enters a series of dates across one row of a worksheet, centers the date in each cell, and then applies border format to the row. Or we can create a macro that defines special print settings in the Page Setup dialog box and then prints the document.

Macros can be simple or extremely complex. They can also be interactive; that is, we can write macros that request information from the user and then act on that information.

There are two ways to create a macro: we can record it, or we can build it by entering instructions in a module. Either way, the instructions are encoded in the programming language Microsoft Visual Basic for Applications (VBA).

5.8.1 Recording a Macro

- On the Tools menu, point to Macro, and then select Record New Macro.
- In the Macro name box, enter the name of the macro. Click Ok.
- A Stop Recording toolbar will appear. Drag it to a new position if it is in the way.
- Perform actions we want to record.
- Press stop recording on toolbar. A macro will be saved.
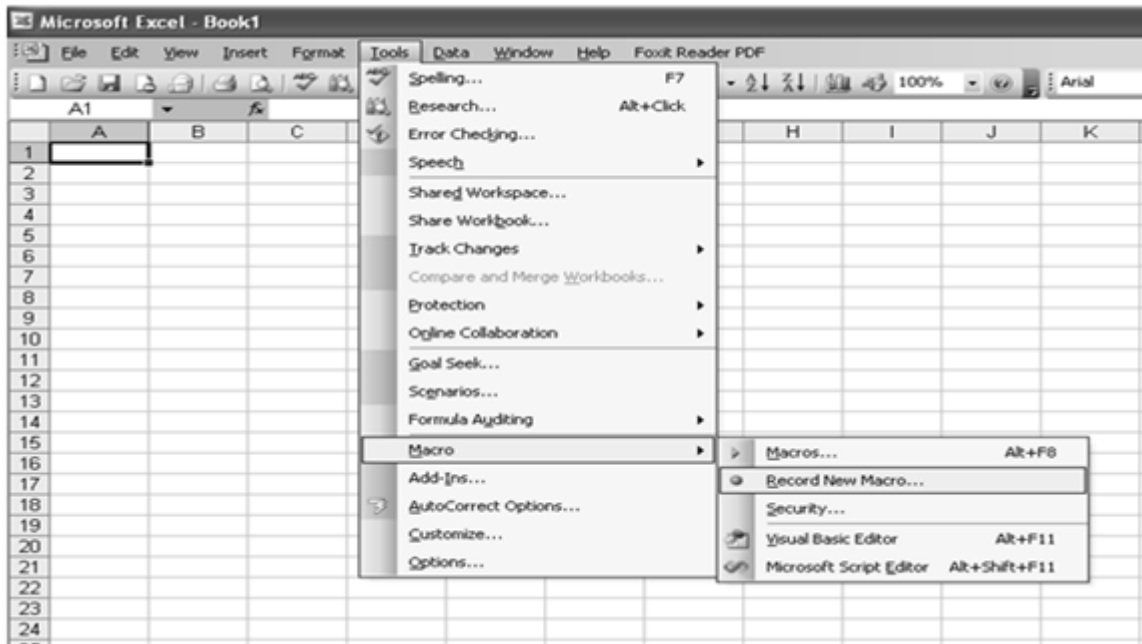
5.8.2 Running a Macro

- Click on Tools menu, select Macro.
- A list of macros, earlier saved will appear. Choose macro we want to run.
- Click Run.
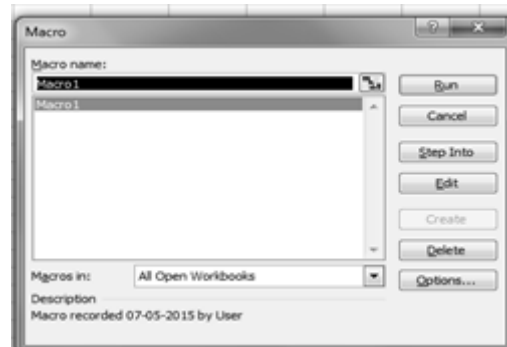
5.9 BUILT IN FUNCTIONS

Functions are power tools which help to perform calculations on data. FUNCTIONS are predefined formulas that will calculate selected data. The user has to simply provide the values based upon which calculations are to be done. All Excel functions consist of three (3) parts: The = sign, the function name, and an argument or range enclosed in parentheses.

A FUNCTION is always identified by the =SIGN preceding the function name. The FUNCTION NAME indicates which function is being used. The ARGUMENT or RANGE is enclosed in parentheses and specifies the range of cells on which the function will act. The ARGUMENT can be a real number, a reference to a cell, a reference to a group of cells, a formula, or another function. A function can be added to the worksheet by two methods:

1. Place the cursor where you want the function result to appear and select Function from Insert menu.

2. Manually type the function at desired place.
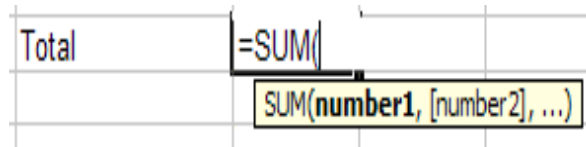
Functions are characterized by purpose. There are 9 function categories.

1. Mathematical Functions
With math and trigonometry functions, we can perform simple and complex mathematical calculations

- **SUM (Range)**- Sum of a group of numbers
- **SQRT(X)** - Displays the square root of a number (X)
- **PRODUCT (range)** – multiplication of given values
- **MODE (argument 1, argument 2)** – will give remainder after dividing argument 1 by argument 2

2. Statistical Functions
Statistical worksheet functions perform statistical analysis on ranges of data. This includes average, highest and lowest values, standard deviation, median, and other statistics.
- **AVERAGE (Range)** - Gives the average of a group of numbers
- **COUNT (Range)** - Counts the items in a list
- **MIN (Range)** - Displays the smallest number in the range
- **MAX (Range)** - Displays the largest number in the range

3. Financial Functions
Financial functions perform common business calculations, such as determining the payment for a loan, the future value or net present value of an investment, the principle and interest etc.
- **FV** – To calculate future value of investment
- **IPMT** – to find interest payment

4. Logical Functions
Logical functions are used to see whether a condition is true or false or to check for multiple conditions. Like,
- **AND**   - **NOT**
- **OR**   - **IF**

5. Lookup Functions
When we need to find values in lists or tables or when you need to find the reference of a cell, we can use the lookup and reference worksheet functions.
- **ADDRESS** - returns a cell reference as text
- **COLUMN** – returns the column number of reference
- **COLUMNS** – returns number of columns in a array of reference

6. Text Functions

With text functions, we can manipulate text strings in formulas. For example, we can change the case or determine the length of a text string. We can also join, or concatenate, a date to a text string. To manipulate the text, excel provides many functions like

- **CHAR**
- **CODE**
- **FIND**
- **LEFT**
- **LEN**

- **LOWER**
- **REPLACE**
- **RIGHT**
- **SEARCH**

7. Date & Time Functions

With date and time functions, we can analyze and work with date and time values in formulas. For example, if we need to use the current date in a formula, use the TODAY worksheet function, which returns the current date based on computer's system clock. There are other main function like

- **DATE**
- **DAY**
- **MONTH**

- **NOW**
- **TIME**
- **YEAR**

8. Engineering Functions: The engineering worksheet functions perform engineering analysis.

9. Database Functions: A set of functions that allows calculations on database. Following are the functions:

DAVERAGE – returns the average of values in a list or database.

DCOUNT – counts the cells in a record that matches a specified condition

DMAX – returns the maximum value from the list or database

DMIN – returns the minimum value from the list or database
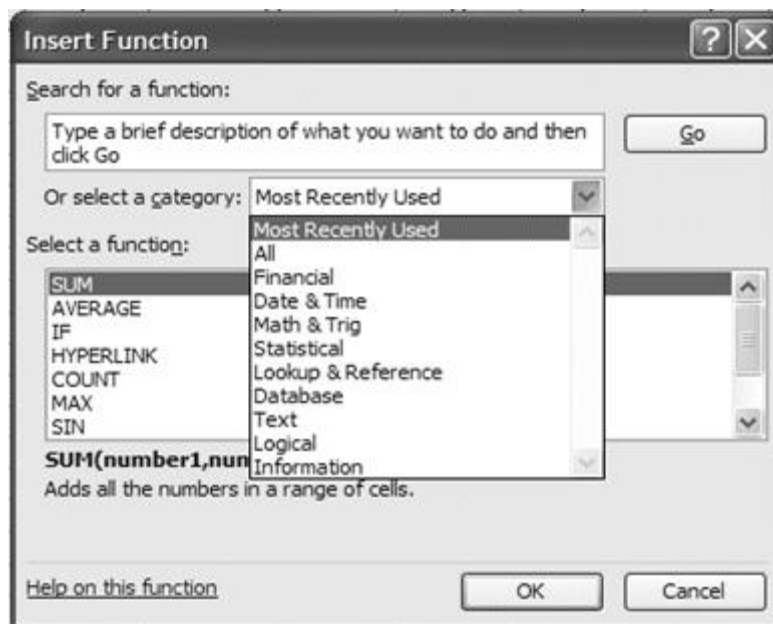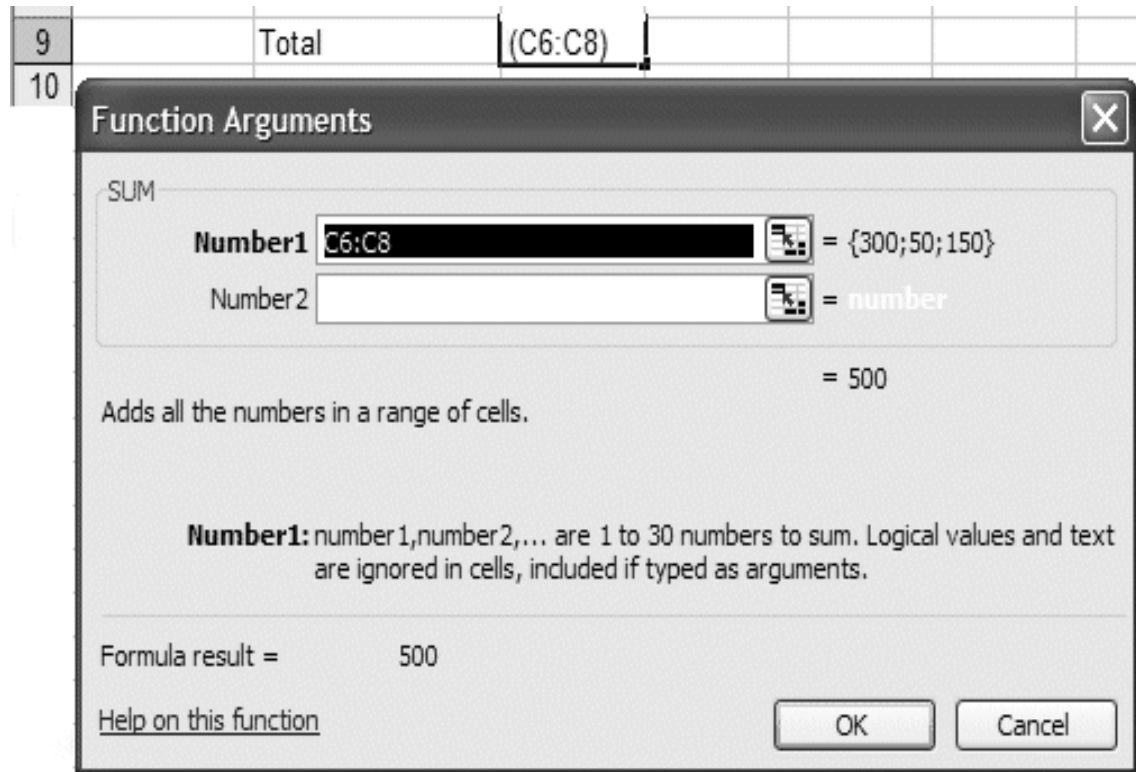
SUMMARY OF THE LESSON

You learnt the following in this lesson:

- Formatting is done to give the professional look to worksheet.

- Charts can be created easily with the help of chart wizard.

- In Excel all formula begin with the (=) equal sign.

- Function is a built in formula in Excel.

- All elements of a chart can be alter after creating it.

- Macro facility is also available in MS-Excel. These are called to speed up any general editing sequence that a user executes in Excel spreadsheet.

- Data can be represented in graphical format using chart or graph option.

- Worksheets can be linked using hyperlink command.

- MS-Excel provides various built-in functions for different purposes such as mathematical functions, statistical functions, logical functions etc.

- Numbers can be formatted in date, time, currency and scientific notations.

SELF ASSESSMENT QUESTIONS AND EXERCISES

11. How different worksheets can be linked with each other?

12. How worksheet functions can be categorized?

13. Write the structure of the Function.

14. Discuss various logical and statistical functions.

15. State the purpose of different mathematical functions.

16. How charts or graphs can be created in MS-Excel?

17. Write the steps to print a graph or chart.

18. What is the use of 'Macros' in MS-Excel?

19. Explain the steps to Record and Run a Macro.

20. What is the advantage of using keyboard shortcuts?

21. What is column chart?

22. What do you mean by sum function?

23. What is count function?

24. Write the steps to use Average( ) function.

25. What is the purpose of SQRT ( ) function?