

4.1 Concept of Electronic Spreadsheet

An Electronic Spreadsheet is a computer application used to organise, calculate, analyse and present numerical data in rows and columns.

- It replaces traditional paper ledgers and calculators.
- Popular software: Microsoft Excel (most commonly used), Google Sheets, LibreOffice Calc.
- Main uses in government offices: Budget preparation, salary sheet, attendance register, financial reports, data analysis and charts.
- Advantages: Automatic calculations, easy editing, formulas & functions, large data handling, printing and charting.

4.2 Organization of Electronic Spreadsheet Application

The structure of an Electronic Spreadsheet (MS Excel) is as follows:

Term	Description	Example
Cell	Intersection of a row and a column	A1, B5, C10
Row	Horizontal line numbered (1, 2, 3 ...)	Row 1 to 1,048,576
Column	Vertical line labelled with letters (A, B, C ...)	Column A to XFD
Worksheet	Single page/sheet inside a workbook	Sheet1, Sheet2
Workbook	Complete Excel file containing one or more worksheets	Book1.xlsx
Workspace	Collection of multiple workbooks opened together (rarely used now)	-

- Active Cell: The cell that is currently selected (thick border).
- Cell Address: Combination of column letter and row number (e.g., D8).
- Cell Range: Group of cells (e.g., A1:A10 or B2:D5).

4.3 Creating, Opening, Saving, Page Setting, Previewing and Printing Workbook; Changing Default Options

Creating a New Workbook:

- File → New → Blank Workbook (or Ctrl + N).

Saving a Workbook:

- File → Save (Ctrl + S) → Choose location → Name → Save as .xlsx.

Opening an Existing Workbook:

- File → Open (Ctrl + O) → Select file.

Page Setting:

- Page Layout tab → Page Setup group:
 - Margins, Orientation (Portrait/Landscape), Paper Size (A4), Scaling.

Previewing and Printing:

- File → Print (Ctrl + P) → Print Preview → Select printer → Print.

Changing Default Options:

- File → Options → General: Change default font (e.g., Preeti or Kalimati for Devanagari), font size, number of sheets, etc.
- File → Options → Save: Set default file format and location.

4.4 Elements of Electronic Spreadsheet Environment

The main parts of the MS Excel screen are:

Element	Location	Function
Menu / Ribbon	Top of the screen	Tabs: Home, Insert, Page Layout, Formulas, Data, Review, View
Toolbars / Quick Access Toolbar	Above Ribbon (customizable)	Save, Undo, Redo, etc.
Formula Bar	Below Ribbon	Displays and edits formula/content of active cell
Status Bar	Bottom of the screen	Shows sum, count, average, zoom level, view mode
Rulers	Horizontal & Vertical	Helps set margins and column width (visible in Page Layout view)
Scrollbars	Right and bottom	Move through large worksheets
Name Box	Left of Formula Bar	Shows active cell address

Other elements: Sheet tabs at the bottom, Row & Column headers.

4.5 Editing, Copying, Moving, Deleting Cell Contents; Formatting Cells; Formatting Rows, Columns and Sheets

Editing Cell Contents:

- Double-click the cell or press F2 → Type → Enter.

Copying, Moving and Deleting:

- Select cell/range → Ctrl + C (Copy) / Ctrl + X (Cut) / Delete.
- Paste: Ctrl + V.
- Drag and Drop: For moving (hold Shift for copy).

Formatting Cells (Home tab → Cells group → Format):

- Font: Style, size, colour, bold, italic, underline.
- Border: Outline, inside, thick, coloured borders.
- Pattern / Fill: Background colour and fill effects.
- Alignment: Horizontal (Left, Center, Right, Justify), Vertical, Wrap Text, Merge & Center.
- Number: General, Number, Currency, Date, Percentage, Custom.
- Protection: Lock cells (used with Sheet Protection).

Formatting Rows, Columns and Sheets:

- Row Height / Column Width: Home → Format → Row Height / Column Width (or drag borders).
- Hide/Unhide: Right-click row/column number → Hide.
- Insert/Delete: Right-click → Insert / Delete.
- Sheet: Right-click sheet tab → Insert, Delete, Rename, Move/Copy, Protect Sheet.

4.6 Using Formula – Relative Cell and Absolute Cell Reference

A formula is an expression that performs calculation on cell values. Every formula in Excel starts with = sign.

Types of Cell Reference:

Type	Symbol	Behaviour when copied	Example	Use
Relative	No \$	Changes automatically	=A1+B1	Normal calculation
Absolute	\$A\$1	Does not change	=\$A\$1+\$B\$1	Fixed cell (e.g., tax rate)
Mixed	\$A1 or A\$1	One part fixed	=\$A1+B\$1	Partial fixed reference

How to toggle reference: Select cell reference inside formula → Press F4 key repeatedly.

Example:

- Relative: In cell C1 write =A1+B1 → Copy to C2 → becomes =A2+B2
- Absolute: =\$A\$1+\$B\$1 → remains same when copied.

4.7 Using Basic Functions

Functions are pre-written formulas. They start with = followed by function name and arguments in brackets.

Most Important Basic Functions:

Function	Syntax	Use	Example
SUM	=SUM(range)	Total of numbers	=SUM(A1:A10)
AVERAGE	=AVERAGE(range)	Average value	=AVERAGE(B1:B20)
MAX / MIN	=MAX(range) / =MIN(range)	Highest / Lowest value	=MAX(C1:C50)
COUNT	=COUNT(range)	Count of numeric cells	=COUNT(D1:D100)
COUNTA	=COUNTA(range)	Count of all non-empty cells	=COUNTA(A1:A100)
IF	=IF(condition, value_if_true, value_if_false)	Logical test	=IF(A1>40,"Pass","Fail")

Note: Functions can be combined (e.g., =SUMIF, =COUNTIF) and are found under Formulas tab → Function Library.

4.8 Generating Series; Sorting and Filtering Data; Summarizing Data with Sub Totals

Generating Series:

- Type first two values (e.g., 1, 2) → Select both → Drag Fill Handle (small square at bottom-right of cell).
- Or Data tab → Fill → Series (Linear, Growth, Date, etc.).

Sorting Data:

- Select data → Data tab → Sort → Choose column → Ascending / Descending.

Filtering Data:

- Select data → Data tab → Filter (drop-down arrows appear).
- Click arrow → Apply criteria (text, number, colour filter).

Summarizing with Sub Totals:

- First sort the data by the column you want to subtotal.
- Data tab → Subtotal → Choose “At each change in” column → Function (Sum, Count, Average) → OK.
- To remove: Data → Subtotal → Remove All.

4.9 Creating Charts

Charts present data visually.

Steps to Create Chart:

1. Select data range.
2. Insert tab → Charts group → Choose chart type:
 - Column / Bar
 - Pie
 - Line
 - Area
 - Scatter
3. Chart appears → Use Chart Design and Format tabs to change style, title, legend, axis labels, colours.
4. Move chart: Click and drag to new location or to new sheet.

4.10 Inserting Header and Footer

- Insert tab → Text group → Header & Footer.
- Header appears at top, Footer at bottom.
- Options: Page number, Date, File name, Custom text, Picture.
- Switch between Header/Footer using the buttons in Header & Footer tab.
- Used mainly in Page Layout view for printing.

4.11 Spell Checking

- Review tab → Spelling (or press F7).
- Red underline = spelling mistake.
- Right-click underlined word → Choose correct suggestion.
- Options: Ignore, Ignore All, Add to Dictionary.
- Also checks grammar in newer versions.

4.12 Importing Data from and Exporting into Other Formats

Importing:

- Data tab → Get Data → From File → From Text/CSV
- Or From Web, From Access, From Excel.
- Text Import Wizard helps set delimiter (comma, tab, etc.).

Exporting:

- File → Save As → Choose format:
 - PDF (*.pdf)
 - CSV (Comma delimited)
 - Text (Tab delimited)
 - Web Page
 - Older Excel format (.xls)

4.13 Familiarity with Devanagari Fonts

- Devanagari fonts used for Nepali language: Preeti, Kalimati, Mangal, Sagarmatha.
- Change font: Home tab → Font → Select Preeti / Kalimati (size 11–14).
- Change default font: File → Options → General → Default font → Preeti.
- Keyboard: Windows + Space to switch between English and Nepali layout.
- Important for government salary sheets, reports and official data entry.

5-Mark Short Answer Questions

Q1. (5 marks) **Explain the concept of Electronic Spreadsheet and its uses in government offices.**

Answer: Electronic Spreadsheet is a computer application used to organise, calculate, analyse and present numerical data in rows and columns.

- Popular software: Microsoft Excel.
- Main uses: Budget sheet, salary register, attendance, financial reports.
- Advantages: Automatic calculation, easy editing, formulas, charts and large data handling.
- It replaces traditional paper ledgers and calculators.

Q2. (5 marks) **Describe the organization of Electronic Spreadsheet (Cells, Rows, Columns, Worksheet, Workbook).**

Answer:

- **Cell:** Intersection of row and column (e.g., A1).
- **Row:** Horizontal line (numbered 1, 2, 3...).
- **Column:** Vertical line (lettered A, B, C...).
- **Worksheet:** Single page/sheet.
- **Workbook:** Complete Excel file containing one or more worksheets.
- Active cell has thick border; cell address is column letter + row number.

Q3. (5 marks) **Write the steps to create, save, open and print a workbook in MS Excel.**

Answer:

- **Create:** File → New → Blank Workbook (Ctrl + N).
- **Save:** File → Save (Ctrl + S) → Choose location → Name → .xlsx.
- **Open:** File → Open (Ctrl + O).
- **Print:** File → Print (Ctrl + P) → Set Page Layout → Print Preview → Print.

Q4. (5 marks) **Describe the main elements of Electronic Spreadsheet Environment.**

Answer:

- **Ribbon/Menu:** Top tabs (Home, Insert, Formulas, Data, etc.).
- **Formula Bar:** Shows and edits content/formula of active cell.
- **Status Bar:** Shows sum, average, count, zoom level.
- **Rulers & Scrollbars:** For margins and navigation.
- **Name Box:** Displays active cell address.

Q5. (5 marks) **Explain Relative and Absolute Cell Reference with examples.**

Answer:

- **Relative Reference:** Changes when copied (e.g., =A1+B1 becomes =A2+B2).
- **Absolute Reference:** Does not change (use \$ sign, e.g., =\$A\$1+\$B\$1).
- Toggle with F4 key.
- Used in formulas for fixed values like tax rate or percentage.

Q6. (5 marks) **Write any five basic functions of MS Excel with examples.**

Answer:

- **SUM:** =SUM(A1:A10) → Total
- **AVERAGE:** =AVERAGE(B1:B20) → Average value
- **MAX / MIN:** =MAX(C1:C50) / =MIN(C1:C50)
- **IF:** =IF(A1>40, "Pass", "Fail")
- **COUNT:** =COUNT(D1:D100) → Count of numbers

Q7. (5 marks) **Explain how to create charts, insert Header & Footer and perform Spell Checking in Excel.**

Answer:

- **Charts:** Select data → Insert → Chart (Column, Pie, Line).
- **Header & Footer:** Insert → Header & Footer → Add page number, date, file name.
- **Spell Checking:** Review → Spelling (F7) → Correct red underlined words.

Q8. (5 marks) **Describe how to generate series, sort, filter data and use Sub Totals in Excel.**

Answer:

- **Series:** Type first two values → Drag Fill Handle.
- **Sort:** Data → Sort → Choose column.
- **Filter:** Data → Filter → Apply criteria.
- **Sub Totals:** First sort data → Data → Subtotal → Choose column and function.

10-Mark Long Answer Questions

Q1. (10 marks) **Explain the concept of Electronic Spreadsheet. Describe its organization and the main elements of its environment.**

Answer: Electronic Spreadsheet is software used to organise and calculate numerical data.

Organization:

- Cell, Row, Column, Worksheet, Workbook.

Environment Elements:

- Ribbon with different tabs
- Formula Bar
- Status Bar
- Rulers, Scrollbars and Name Box

These features make data entry, calculation and presentation very easy and efficient.

Q2. (10 marks) **Describe the process of creating, saving, opening, page setting and printing a workbook. Also explain how to change default options.**

Answer:

Creating: Ctrl + N → Blank Workbook.

Saving: Ctrl + S (.xlsx).

Opening: Ctrl + O.

Page Setting: Page Layout → Margins, Orientation, Paper Size (A4).

Printing: Ctrl + P → Print Preview.

Default Options: File → Options → General → Change default font (e.g., Preeti), number of sheets, etc. This process is very important for official government reports.

Q3. (10 marks) **Explain editing, copying, moving and formatting features of cells, rows, columns and sheets in MS Excel.**

Answer: Editing: Double-click or press F2. **Copy/Move/Delete:** Ctrl + C, Ctrl + X, Delete.

Formatting Cells:

- Font, Border, Fill colour, Alignment, Number format, Protection.

Rows & Columns:

- Change height/width, Insert/Delete, Hide/Unhide.

Sheets: Rename, Move/Copy, Protect Sheet. These features help in making professional and readable data sheets.

Q4. (10 marks) What are formulas and functions in Excel? Explain Relative and Absolute Cell Reference with examples. Also describe any five basic functions.

Answer: Formulas start with “=” sign.

Cell Reference:

- **Relative:** Changes when copied.
- **Absolute:** Fixed with \$ sign (press F4).

Basic Functions: SUM, AVERAGE, MAX, MIN, IF, COUNT, COUNTA.

These are used for automatic calculations in salary sheets, budget and reports.

Q5. (10 marks) Describe how to generate series, sort, filter, create charts, insert Header & Footer and use Import/Export features in MS Excel.

Answer:

- **Series:** Drag Fill Handle or Data → Fill → Series.
- **Sort & Filter:** Data tab.
- **Charts:** Insert → Choose type (Column, Pie, Line).
- **Header & Footer:** Insert tab.
- **Import/Export:** Data → Get Data or Save As (PDF, CSV).

These features are essential for data analysis and official reporting.

Q6. (10 marks) Explain the importance of Devanagari fonts and security/proofing tools (Spell Checking, Protection) in Electronic Spreadsheet for government use.

Answer:

- **Devanagari Fonts:** Preeti, Kalimati → Used for Nepali data entry (set as default in Options).
- **Spell Checking:** Review → Spelling (F7).
- **Protection:** Lock cells and protect sheet to prevent unauthorised changes.

These tools ensure accuracy, Nepali language support and data security in official documents.