BSN – ICT – MS EXCEL

**1. Defining Cell, Rows, Columns, and Sheets**

* **Cell:**
  + **Definition:** The fundamental building block of a worksheet. It's the intersection of a row and a column.
  + **Identification:** Each cell has a unique address (or reference) composed of its column letter and row number (e.g., A1, B5, C20).
  + **Purpose:** Used to store a single piece of data, which can be text, numbers, dates, times, or formulas.
* **Row:**
  + **Definition:** A horizontal series of cells in a worksheet.
  + **Identification:** Identified by numbers (1, 2, 3, ...) along the left side of the worksheet.
  + **Capacity:** An Excel sheet typically contains over a million rows.
* **Column:**
  + **Definition:** A vertical series of cells in a worksheet.
  + **Identification:** Identified by letters (A, B, C, ..., AA, AB, ...) along the top of the worksheet.
  + **Capacity:** An Excel sheet typically contains over sixteen thousand columns.
* **Sheet (Worksheet):**
  + **Definition:** A single page within an Excel workbook, consisting of a grid of cells, rows, and columns.
  + **Identification:** Tabs at the bottom of the Excel window display the sheet names (e.g., Sheet1, Sheet2, Sales Data).
  + **Purpose:** Used to organize and store related data. A workbook can contain multiple sheets.

**2. Explaining Formulas and Putting Values in Excel Sheet**

* **Values (Data Entry):**
  + **Definition:** Raw data (text, numbers, dates, etc.) directly entered into a cell.
  + **How to put values:** Simply select a cell and start typing. Press Enter to move to the next cell or use arrow keys to navigate.
  + **Examples:**
    - John Doe (text)
    - 12345 (number)
    - 2023-10-26 (date)
    - 9:30 AM (time)
* **Formulas:**
  + **Definition:** Expressions that perform calculations or other actions on the data in your worksheet.
  + **Syntax:** All formulas in Excel **must begin with an equals sign (=)**.
  + **Components:** Can include cell references (A1, B2), operators (+, -, \*, /), functions (SUM, AVERAGE), and constants.
  + **Purpose:** Automate calculations, perform logical tests, manipulate text, and much more.
  + **Example:**
    - =A1+B1 (Adds the values in cell A1 and B1)
    - =SUM(C1:C10) (Calculates the sum of values from C1 to C10)
    - =IF(D1>50, "Pass", "Fail") (Checks if D1 is greater than 50 and returns "Pass" or "Fail")

**3. Learn to Merge Cells, Conditional Formatting, and Format Tables**

* **Merge Cells:**
  + **Purpose:** To combine two or more adjacent cells into a single larger cell. This is often used for creating headings that span across multiple columns.
  + **How to:**
    1. Select the cells you want to merge.
    2. Go to the **Home** tab.
    3. In the **Alignment** group, click the **Merge & Center** button (or click the dropdown for other merge options like Merge Across, Merge Cells).
  + **Note:** Only the data from the top-leftmost cell will be preserved; data in other merged cells will be lost.
* **Conditional Formatting:**
  + **Purpose:** To automatically apply specific formatting (e.g., color, font style, icons) to cells based on their content, making data patterns and trends visually apparent.
  + **How to:**
    1. Select the range of cells you want to apply formatting to.
    2. Go to the **Home** tab.
    3. In the **Styles** group, click **Conditional Formatting**.
    4. Choose a rule type (e.g., Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, Icon Sets) and specify your criteria.
  + **Example:** Highlight all scores above 80 in green.
* **Format as Table:**
  + **Purpose:** To convert a range of cells into an Excel Table, which provides built-in functionalities like filtering, sorting, banded rows/columns, automatic formula replication, and total rows. This is different from just applying borders.
  + **How to:**
    1. Select any cell within the data range you want to convert to a table.
    2. Go to the **Home** tab.
    3. In the **Styles** group, click **Format as Table**.
    4. Choose a table style from the gallery.
    5. Confirm the data range and check "My table has headers" if applicable.
  + **Benefits:** Easier data management, improved readability, and dynamic ranges for formulas.

**4. Discuss Cell Styles, Sort and Filter, Find and Select**

* **Cell Styles:**
  + **Purpose:** To apply a predefined set of formatting attributes (font, font size, border, fill color, number format, protection) to a cell or range of cells with a single click. This ensures consistency and saves time.
  + **How to:**
    1. Select the cell(s) you want to style.
    2. Go to the **Home** tab.
    3. In the **Styles** group, click **Cell Styles**.
    4. Choose a style from the gallery (e.g., Good, Bad, Neutral, Headings, Data and Model).
  + **Customization:** You can also create new custom cell styles.
* **Sort and Filter:**
  + **Sort:**
    1. **Purpose:** To rearrange data in ascending or descending order based on the values in one or more columns.
    2. **How to:**
       1. Select any cell within your data or table.
       2. Go to the **Data** tab.
       3. In the **Sort & Filter** group, click **Sort A to Z** (ascending), **Sort Z to A** (descending), or **Sort** for custom sorting options (e.g., sort by multiple columns).
  + **Filter:**
    1. **Purpose:** To display only the rows that meet specific criteria, temporarily hiding the rest.
    2. **How to:**
       1. Select any cell within your data or table.
       2. Go to the **Data** tab.
       3. In the **Sort & Filter** group, click the **Filter** button. This adds dropdown arrows to your header row.
       4. Click the dropdown arrow in the column you want to filter, and select the criteria (e.g., specific values, number filters, text filters).
* **Find and Select:**
  + **Purpose:** To quickly locate specific text, numbers, formulas, comments, or other content within a worksheet. It also allows replacing found content.
  + **How to:**
    1. Go to the **Home** tab.
    2. In the **Editing** group, click **Find & Select**.
    3. Choose **Find...** (Ctrl+F) to search for content, or **Replace...** (Ctrl+H) to find and replace.
    4. Other options include Go To, Go To Special (to find cells with specific characteristics like formulas, blanks, conditional formats), Formulas, Comments, etc.

**5. Understand Automatic Calculations, Series Generation, and How to Create DMCs and Merit Lists**

* **Automatic Calculations:**
  + **Concept:** Excel's core strength is its ability to automatically recalculate formula results whenever the input values change. You don't need to manually re-enter formulas.
  + **How it works:** When you change a number in a cell that is referenced by a formula, Excel instantly updates the result of that formula and any other formulas dependent on it.
  + **Example:** If cell C1 contains =A1+B1, and you change the value in A1, the value in C1 immediately updates.
* **Series Generation (Fill Handle):**
  + **Purpose:** To quickly fill a range of cells with a series of data, such as numbers, dates, times, or custom lists, without manual entry.
  + **How to:**
    1. Enter the starting value(s) in one or two cells (e.g., 1 in A1, or Jan in A1 and Feb in A2).
    2. Select the cell(s).
    3. Drag the **fill handle** (the small square at the bottom-right corner of the selected cell/range) across the cells you want to fill.
    4. **Numbers:** If you drag 1, it repeats 1, 1, 1.... If you select 1 and 2, and drag, it generates 3, 4, 5....
    5. **Dates/Times:** Automatically increments (e.g., Jan 1, Jan 2, Jan 3...).
    6. **Custom Lists:** Can recognize patterns for weekdays, months, etc.
* **Creating DMCs (Detailed Mark Certificates) and Merit Lists:**
  + **General Approach in Excel:**
    1. **Data Organization:**
       - Create columns for Student Name, Roll Number, Subject 1 Marks, Subject 2 Marks, Total Marks, Percentage, Grade, Remarks, etc.
    2. **Formulas for Totals/Percentages:**
       - **Total Marks:** Use SUM() function (e.g., =SUM(C2:E2) if marks are in C, D, E).
       - **Percentage:** = (Total Marks / Max Possible Marks) \* 100.
    3. **Grades (using IF or VLOOKUP):**
       - **IF Function:** Nested IF statements can assign grades based on percentage ranges (e.g., =IF(F2>=90,"A+",IF(F2>=80,"A",...))).
       - **VLOOKUP:** Create a separate table for grade ranges and use VLOOKUP for dynamic grading.
    4. **Remarks (using IF):**
       - Based on grades or specific conditions (e.g., =IF(G2="F","Fail","Pass")).
    5. **Conditional Formatting for Visuals:**
       - Highlight students who passed/failed, or achieved top scores.
    6. **Merit List (Sort and Filter):**
       - After all calculations, select your data range (or ensure it's a table).
       - Use the **Sort** feature (from the Data tab) to sort by Percentage (Descending) or Total Marks (Descending) to create the merit order.
       - Apply **Filter** if you want to see only top N students or students meeting certain criteria.
    7. **Data Validation (Optional but Recommended):**
       - To ensure correct data entry (e.g., marks between 0-100).
    8. **Templates:** Once created, you can save the Excel file as a template (.xltx) for future use, simplifying the process for new batches of students.

These notes cover the core functionalities of Excel relevant to common student tasks, providing a solid foundation for practical application.