Assignment Code: DA-AG-012

Advanced Excel Assignment | Solution

Instructions: Carefully read each question. Use Google Docs, Microsoft Word, or a similar tool to create a document where you type out each question along with its answer. Save the document as a PDF, and then upload it to the LMS. Please do not zip or archive the files before uploading them. Each question carries 20 marks.

Total Marks: 200

Question 1 : Explain the difference between Absolute, Relative, and Mixed Cell Referencing in Excel with examples.

Answer :

Relative Cell Reference :
A **relative cell reference** refers to a cell **based on its position** relative to the cell that contains the formula. It **automatically adjusts** when the formula is copied to another cell.
Example:
If =A1 + B1 is in cell C1, and you copy it to C2, it will become =A2 + B2.

Absolute Cell Reference :
An **absolute cell reference** always refers to the **exact same cell**, no matter where the formula is copied. You use the **dollar sign ($)** to lock both the column and the row.
Example:
If =$A$1 + B1 is in cell C1, and copied to C2, it will become =$A$1 + B2.

Mixed Cell Reference :
A **mixed cell reference** locks either the **row or the column**, but **not both**.
There are two types:
- $A1: Column A is fixed, row changes
- A$1: Row 1 is fixed, column changes

Example:
If =$A1 is in B1:

- Copy to B2: becomes =$A2 (row changes, column fixed).

If =A$1 is in B1:

- Copy to C1: becomes B$1 (row fixed, column changes).

Question 2 : What is a Macro in Excel? How does it help in automation?

Answer :

A **Macro in Excel** is a **set of instructions** written in **VBA (Visual Basic for Applications)** that automates repetitive tasks. It records your actions like clicks, typing, formatting, calculations, and then plays them back when needed — saving time and reducing manual effort.

How it helps in Automation :
- Macros can replicate tasks like formatting, copying data, generating reports, etc., in just one click.
- Since macros perform the same set of actions consistently, there's less chance of mistakes.
- Users can write their own VBA code for advanced automation tailored to their needs.

Question 3 : What are Text Functions in Excel? Mention any five with examples.

Answer :

- LEFT(text, num_chars) → Extracts characters from the left

  (where text = text string from which we want to extract , num_chars = number of characters we want to extract)

- RIGHT(text, num_chars) → Extracts characters from the right.
- LEN(text) → Returns text length
- TRIM(text) → Removes extra spaces
- CONCATENATE(text1, text2) or TEXTJOIN() → Joins text

Examples :

Product	Left	Right
Smartwatch	Smar	=RIGHT(A2,4)
T-Shirt	T-Sh	hirt
Wall Clock	Wall	lock
Bluetooth Speaker	Blue	aker
Jeans	Jean	eans
Laptop	Lapt	ptop
Sofa Set	Sofa	Set
Dress	Dres	ress
Smartphone	Smar	hone
Dining Table Set	Dini	Set
Leather Jacket	Leat	cket
Headphones	Head	ones
Floor Lamp	Floo	Lamp
Sneakers	Snea	kers

Product	Left	Right	Length
Smartwatch	Smar	atch	=LEN(A2)
T-Shirt	T-Sh	hirt	7
Wall Clock	Wall	lock	10
Bluetooth Speaker	Blue	aker	17
Jeans	Jean	eans	5
Laptop	Lapt	ptop	6
Sofa Set	Sofa	Set	8
Dress	Dres	ress	5
Smartphone	Smar	hone	10
Dining Table Set	Dini	Set	16
Leather Jacket	Leat	cket	14
Headphones	Head	ones	10
Floor Lamp	Floo	Lamp	10
Sneakers	Snea	kers	8

B2   fx   =CONCATENATE(A2,A3,A4)

	A	B	C
1	Product	Concatenate	Left
2	Smartwatch	SmartwatchT-ShirtWall Clock	Smar
3	T-Shirt		T-Sh
4	Wall Clock		Wall
5	Bluetooth Speaker		Blue
6	Jeans		Jean
7	Laptop		Lapt
8	Sofa Set		Sofa
9	Dress		Dres
10	Smartphone		Smar
11	Dining Table Set		Dini
12	Leather Jacket		Leat
13	Headphones		Head
14	Floor Lamp		Floo
15	Sneakers		Snea

Product	Trim
Smartwatch	=TRIM(A2)
T-Shirt	T-Shirt
Wall Clock	Wall Clock
Bluetooth Speaker	Bluetooth Speaker
Jeans	Jeans
Laptop	Laptop
Sofa Set	Sofa Set
Dress	Dress
Smartphone	Smartphone

Question 4 : What is the use of **Scenario Manager** in decision making?

Answer :

Scenario Manager in Excel is a feature used for **what-if analysis**, allowing users to evaluate how changes in key variables affect outcomes. It helps in **decision making** by enabling users to create, compare, and analyze multiple business scenarios—such as best case, worst case, and most likely case—without changing the actual data.

How it helps in Decision Making:

- It supports data-driven decisions by helping managers understand the impact of different choices before implementing them.
- Scenario Manager lets you switch between scenarios and view their effects on key metrics like profit, revenue, or budget.
- It simplifies comparison by showing all scenarios in a summary report, making it easier to interpret results.

Question 5 : Define the purpose of VLOOKUP and HLOOKUP. How are they different from XLOOKUP? Which among XLOOKUP and INDEX-MATCH is best while usage?

Answer :

VLOOKUP (Vertical Lookup) and **HLOOKUP** (Horizontal Lookup) are Excel functions used to **search for a value** in a table and return a corresponding value from another column or row.

- **VLOOKUP**: Searches for a value **vertically** in the **first column** of a range and returns a value from the same row in a specified column.
  Syntax: `=VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])`
- **HLOOKUP**: Searches for a value **horizontally** in the **first row** of a range and returns a value from the same column in a specified row.
  Syntax: `=HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])`

How are they different from XLOOKUP?
XLOOKUP is a more advanced and flexible lookup function.

It **replaces both VLOOKUP and HLOOKUP** by allowing:

- Vertical and horizontal lookups
- Left-to-right and right-to-left searching
- Dynamic arrays
- No need for column or row index numbers

Syntax: `=XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])`

Feature	XLOOKUP	INDEX-MATCH
Simplicity	Easier to use (single function)	Slightly more complex (nested functions)
Flexibility	Very high (can search both ways)	Also flexible, but needs more setup
Performance (Large Data)	Fast (optimized for modern Excel)	Slightly faster in older Excel versions
Compatibility	Excel 365 / 2019+ only	Works in all Excel versions
Error Handling	Built-in	Requires IFERROR or IFNA

Question 6 : Create a dataset of 8 employees with joining dates. Use the dummy dataset to calculate their experience in years and months.

Answer :

	A	B	C	D	E	F
1	**Employee Name**	**Joining Date**	**Experience (Years)**	**Experience (Months)**	**Experience (Years & Months)**	
2	Aditi Sharma	2019-04-15				
3	Rohan Mehta	2020-07-01				
4	Sneha Kapoor	2022-01-20				
5	Rahul Verma	2018-10-05				
6	Tanya Gupta	2021-03-12				
7	Karan Malhotra	2017-06-25				
8	Neha Bansal	2023-02-10				
9	Arjun Singh	2020-12-30				
10						
11						

Step 1 :
Create a dummy dataset of about 8 rows with Column Names as
"Employee Name" , "Joining Date", "Experience (Years)" , "Experience (Months)", "Experience (Years & Months)" .

Step 2 :

Apply DATEDIF() formula

Assuming:

- Today's date is in **cell F1** → enter =TODAY()
- Joining Date is in **cell B2**

Formulas:

1. **Experience in Years:**
   =DATEDIF(B2, $F$2, "Y")
2. **Remaining Months after full years:**
   =DATEDIF(B2, $F$2, "YM")
3. **Combined (Years & Months):**
   =DATEDIF(B2, $F$2, "Y") & " Years " & DATEDIF(B2, $F$2, "YM") & " Months"

	A	B	C	D	E	F	G
1	**Employee Name**	**Joining Date**	**Experience (Years)**	**Experience (Months)**	**Experience (Years & Months)**	**Current Date**	
2	Aditi Sharma	2019-04-15	6	2	6 Years 2 Months	7/12/2025	
3	Rohan Mehta	2020-07-01	5	0	5 Years 0 Months		
4	Sneha Kapoor	2022-01-20	3	5	3 Years 5 Months		
5	Rahul Verma	2018-10-05	6	9	6 Years 9 Months		
6	Tanya Gupta	2021-03-12	4	4	4 Years 4 Months		
7	Karan Malhotra	2017-06-25	8	0	8 Years 0 Months		
8	Neha Bansal	2023-02-10	2	5	2 Years 5 Months		
9	Arjun Singh	2020-12-30	4	6	4 Years 6 Months		
10							
11							
12							
13							

Question 7 : You are provided with a dataset containing details of 100 road accidents.Design a **Road Accident Analysis Dashboard** using **Pivot Tables and Slicers** in Excel.

Dataset Link

Answer :

Creating Pivot Tables

Pivot Table 1: Casualties by Location and Vehicle Type

1. Go to **Insert → PivotTable**.
2. Select the entire data range → Place it in a **New Worksheet**.
3. Drag Fields:
   - **Rows:** Location
   - **Columns:** Vehicle Type
   - **Values:** Casualties (set to **Sum**)
4. This gives a matrix of casualties by location and vehicle.

Pivot Table 2: Casualties by Road Condition

1. Insert a new Pivot Table.
2. Drag Fields:
   - **Rows:** Road Condition
   - **Values:** Casualties (Sum)

Pivot Table 3: Casualties by Month and Accident Type

1. Insert a new Pivot Table.
2. Drag Fields:
   - **Rows:** Month
   - **Columns:** Accident Type
   - **Values:** Casualties

Pivot Table 4: Casualties by Weather Condition and Accident Type

1. Insert a new Pivot Table.
2. Drag Fields:
   - **Rows:** Weather Condition
   - **Columns:** Accident Type
   - **Values:** Casualties

Inserting Pivot Charts

Bar Chart (Stacked Column) – Casualties by Location

1. Click inside the first pivot table (Location vs Vehicle).
2. Go to **Insert → Column Chart → Clustered Column**.
3. Adjust colors and labels as needed.

Line Chart – Casualties by Month

1. Click inside Pivot Table 3.
2. Go to **Insert → Line Chart → Line with markers**.
3. Customize line thickness and color per accident type.

Pie Chart – Road Condition

1. Click Pivot Table 2.
2. Insert a **Pie Chart**.
3. Right-click to add percentages and data labels.

3D Column Chart – Weather Condition

1. Click Pivot Table 4.
2. Insert a **3D Clustered Column Chart**.

Adding Slicers for Interactivity

1. Click on any Pivot Table.
2. Go to **PivotTable Analyze → Insert Slicer**.
3. Add Slicers for:
   ○ **Severity**
   ○ **Month**
4. Format slicers:
   ○ Adjust size and place them beside charts.
   ○ Change style from the Slicer Tool tab.

Customise the Dashboard according to yourself by changing the theme of charts, labelling, etc. and also link the slicers to the chart.

Dashboard Link : [Final Link](#)

Question 8 : Create a table of 10 products with stock levels. Use Macros to highlight:

● Low stock (less than 10 units) in red
● Overstock (more than 50 units) in blue

Answer :

	A	B	C	D
1	Product ID	Product Name	Stock Level	
2	P001	Notebooks	8	
3	P002	Pens	35	
4	P003	Staplers	12	
5	P004	Markers	5	
6	P005	Envelopes	60	
7	P006	Folders	9	
8	P007	Tape Rolls	51	
9	P008	Whiteboard	18	
10	P009	Erasers	3	
11	P010	Printer Paper	70	
12				
13				

- Open Excel Workbook and then press Alt+F11 to open VBA Editor.
- On the left panel, right-click on **XYZ (YourWorkbookName)**.
- Click Insert → Module.
- Use code :

```vba
Sub Highlight()

    Dim cell As Range

    For Each cell In Range("C2:C11")

        If IsNumeric(cell.Value) Then

            Select Case cell.Value

                Case Is < 10

                    cell.Interior.Color = RGB(255, 0, 0) ' Red

                Case Is > 20

                    cell.Interior.Color = RGB(0, 255, 0) ' Green

                Case Else

                    cell.Interior.ColorIndex = xlNone ' Clear color

            End Select

        End If

    Next cell

End Sub
```

	A	B	C	D
1	**Product ID**	**Product Name**	**Stock Level**	
2	P001	Notebooks	8	
3	P002	Pens	35	
4	P003	Staplers	12	
5	P004	Markers	5	
6	P005	Envelopes	60	
7	P006	Folders	9	
8	P007	Tape Rolls	51	
9	P008	Whiteboard	18	
10	P009	Erasers	3	
11	P010	Printer Papers	70	
12				
13				

Question 9 : You are given a dataset : Create a drop-down list of product names in a separate cell using Data Validation, and write a formula in the adjacent cell so that when a product is selected from the drop-down, its corresponding price is automatically displayed.

Dataset Link

Answer :

Create a Dropdown List for Product Selection

1. Choose a blank cell where you want the dropdown (e.g., **O2**).
2. Go to the **Data** tab → Click **Data Validation**.
3. In the Data Validation window:
   - Under **Allow**, select **List**.
   - In the **Source** field, select the range with unique product names (e.g., `M2:M50`).
   - Click **OK**.
4. Now, **O2** will have a dropdown with all unique product names.

Use the XLOOKUP Formula

1. Click on the cell where you want to display the **Unit Price** (e.g., **P3**).
2. Enter the following formula:

```
=XLOOKUP(O3, F2:F50, M2:M50, "Please select the Product Name", 1, 1)
```

Question 10 : Case Scenario :-
Dataset Link
You are a data analyst working for a retail firm. You've received a sales dataset that includes customer transactions from various regions and product categories. Your job is to analyze this data, clean inconsistencies, extract insights, and build visual reports.
Task :

1. Apply **data validation** in the `Units Sold` column to ensure only values between **1 and 20** are allowed.
2. Highlight rows where **Profit > ₹5000**
3. Highlight any phone number that is **not exactly 10 digits**
4. Find the Revenue generated by each product and also label according to revenue generated as "High", "Medium", "Low".
5. Find the profit percentage up to two decimal places.
6. Show Total Revenue and Total Profit by Region.
7. Show Average Units Sold per Product Category.

Answer :

1. Data Validation on Units Sold :
- Select the **'Units Sold'** column (e.g., H2:H1000).
- Go to the **Data** tab → Click on **Data Validation**.
- In the Data Validation window:
  - **Allow**: Whole number
  - **Data**: Between
  - **Minimum**: 1
  - **Maximum**: 20

    Click **OK**

2. Conditional Formatting: Highlight Profit > ₹5000

Goal: Highlight rows where profit is greater than ₹5000.

Steps:

1. Select the entire dataset (e.g., A2:L1000).
2. Go to the **Home** tab → Click **Conditional Formatting** → **New Rule**.
3. Choose **"Use a formula to determine which cells to format"**.
4. Enter the formula (assuming Profit is in column J):
   `=$J2>5000`
5. Click **Format**, choose a fill color (e.g., green), and click **OK**.

3. Conditional Formatting: Invalid Phone Numbers

Steps:

1. Select the **'Phone Number'** column (e.g., G2:G1000).
2. Go to **Home** → **Conditional Formatting** → **New Rule**.
3. Use the formula:
   `=LEN(G2)<>10`
4. Choose a highlight color and click **OK**.

4. Adding Revenue and Revenue Label
Steps :
1. Add a new column and label it as Revenue.
2. Use Formula :
   `=Price (H2)* Quantity Sold (I2)`
3. Add another column as Revenue Label
4. Use formula :
   `=IF(L2>10000,"High",IF(L2<5000,"Low","Medium"))`

5. Calculate Profit % :
Steps :
1. Add new column and label it as Profit %.
2. Use Formula : `=(J2/L2)*100`

6. Show Total Revenue and Total Profit by Region (Pivot Table)

Steps:

1. Select your full dataset → Go to **Insert** → **PivotTable**.
2. Place **Region** in the **Rows** section.
3. Place **Revenue** and **Profit** in the **Values** section.
4. Ensure both are set to **Sum**.

7. Show Average Units Sold per Product Category (Pivot Table)

Steps:

1. Insert a new Pivot Table from your dataset.
2. Place **Product Category** in the **Rows** section.
3. Place **Units Sold** in the **Values** section.
4. In the Values area:
   - Click the dropdown on "Units Sold" → **Value Field Settings**
   - Choose **Average** → Click **OK**

Final Result : Dataset Link