Logical Functions & Lookup Assignment

1. Write a formula to check if the marks in the cell. B2 are greater than or equal to 40. If yes, return "Pass", otherwise "Fail".

Student Name	Marks
Riya	45
Siya	72
Raju	55
Rahul	80
Ram	30

Answer: To check whether the marks in cell B2 are greater than or equal to 40, use the IF function in Excel.

Formula:

=IF(B2>=40,"Pass","Fail")

Explanation:

- B2>=40 → checks if the marks are 40 or more
- "Pass" → returned if the condition is TRUE
- "Fail" → returned if the condition is FALSE

How to apply:

1. Enter the formula in cell C2 (Result column).
2. Press Enter.
3. Drag the formula down to apply it to other students.

This will correctly show Pass or Fail for each student based on their marks.

2. **A company gives a bonus if sales are above 40,000 and attendance is greater than or equal to 90%. Write a formula to calculate whether the employee will get a bonus or not.**

Employee	Sales	Attendance
Arjun	55000	95
Simran	65000	85
Rohit	30000	90
Anjali	25000	65

Answer: To check whether an employee gets a bonus, both conditions must be satisfied:

- Sales > 40,000
- Attendance ≥ 90%

Excel Formula:

Assuming:

- Sales is in cell B2
- Attendance is in cell C2

=IF(AND(B2>40000, C2>=90), "Bonus", "No Bonus")

Explanation:

- AND(B2>40000, C2>=90) → checks both conditions together
- "Bonus" → returned if both conditions are TRUE
- "No Bonus" → returned if any condition is FALSE

How to apply:

1. Enter the formula in cell D2.
2. Press Enter.
3. Drag the formula down for other employees.

This formula accurately identifies which employees are eligible for a bonus.

3. **Write a nested IF formula:**

If marks in B2 are ≥ 90 → "A", ≥ 75 → "B", ≥ 50 →"C", otherwise "Fail".

Student Name	Marks
Raj	85
Neha	96
Vivek	57
Rani	92
Sneha	75

Answer: To assign grades based on **marks in cell B2**, use a **nested IF formula**.

Nested IF Formula:

=IF(B2>=90,"A",IF(B2>=75,"B",IF(B2>=50,"C","Fail")))

Explanation:

- If **Marks ≥ 90 → "A"**
- Else if **Marks ≥ 75 → "B"**
- Else if **Marks ≥ 50 → "C"**
- Otherwise → **"Fail"**

How to Apply:

1. Enter the formula in **cell C2** (Grade column).
2. Press **Enter**.
3. Drag the formula down to apply it to all students.

This will correctly assign grades to each student based on their marks.

4. **Find the Department of Employee ID = E103. Also explain which LOOKUP function is used and why?**

EmpID	Name	Department
E101	Raju	IT
E102	Riya	HR
E103	Roshni	Finance
E104	Sejal	Sales

Answer: Department of Employee ID E103

The department of Employee ID E103 is Finance.

Excel Formula Used:

=VLOOKUP("E103", A2:C5, 3, FALSE)

Explanation of the LOOKUP Function Used:

VLOOKUP is used here because:

- The Employee ID (EmpID) is in the first column of the table.
- We want to find a value (Department) from another column in the same row.
- The data is arranged vertically (in columns).
- FALSE ensures an exact match, which is required for Employee IDs.

How the Formula Works:

- "E103" → the value to search for
- A2:C5 → the table range
- 3 → the column number containing the Department
- FALSE → exact match only

Therefore, the formula correctly returns Finance as the department for Employee ID E103.

5. **A company has set the following commission structure for its sales team:**

Sales Amount	Commission Rate
0	5%
20000	10%
50000	15%
80000	20%

If a salesperson achieves sales of ₹45,000, use the VLOOKUP function to determine the commission rate applicable.

Answer: Applicable Commission Rate for Sales of ₹45,000

The commission rate applicable for ₹45,000 sales is 10%.

Excel Formula (using VLOOKUP):

Assuming:

- Sales Amount table is in cells A2:B5
- Sales achieved (₹45,000) is in D2

=VLOOKUP(D2, A2:B5, 2, TRUE)

Why VLOOKUP with TRUE is Used:

- The commission structure is based on ranges of sales, not exact values.
- Using TRUE enables approximate match, which:
  - Finds the largest sales amount less than or equal to ₹45,000
  - Then returns the corresponding commission rate.

How It Works:

- ₹45,000 lies between ₹20,000 and ₹50,000
- VLOOKUP matches it with ₹20,000
- The corresponding commission rate is 10%

  Final Answer:

Commission Rate = 10%

6. **The HR department maintains the following leave records of employees:onus or not .**

Employee Name	Leaves Taken	Leaves Allowed
Alex	10	12
Bob	10	15
Anna	8	12

Write an IF function to check whether an employee has Exceeded their allowed leave balance. If Leaves Taken > Allowed Leaves, display "Exceeded". Otherwise, display "OK".

Answer: To check whether an employee has exceeded the allowed leave balance, use the IF function in Excel.

Excel Formula:

Assuming:

- Leaves Taken is in cell B2
- Leaves Allowed is in cell C2

=IF(B2>C2,"Exceeded","OK")

Explanation:

- B2>C2 → checks if leaves taken are more than leaves allowed
- "Exceeded" → returned if the condition is TRUE
- "OK" → returned if the condition is FALSE

How to Apply:

1. Enter the formula in cell D2 (Status column).
2. Press Enter.
3. Drag the formula down to apply it to other employees.

This formula accurately indicates whether each employee has exceeded their leave limit or is within the allowed balance.

7. Find the salary of EmpID = E105 using INDEX-MATCH Function.

EmpID	Salary
E104	55000
E105	72000
E106	62000
E102	41000

Answer: Salary of Employee ID E105

The salary of EmpID E105 is ₹72,000.

Excel Formula (INDEX–MATCH):

Assuming:

- EmpID is in cells A2:A5
- Salary is in cells B2:B5

=INDEX(B2:B5, MATCH("E105", A2:A5, 0))

Explanation of INDEX–MATCH:

- MATCH("E105", A2:A5, 0)
  Searches for E105 in the EmpID column and returns its row position.
  0 ensures an exact match.
- INDEX(B2:B5, …)
  Returns the salary value from the Salary column corresponding to that row number.

Why INDEX–MATCH is Used:

- It allows lookup from any column to any column.
- More flexible and powerful than VLOOKUP.
- Works even if the lookup column is not the first column.

Final Answer: Salary of EmpID E105 = ₹72,000

8. **Use the XLOOKUP function to find the Department of the employee with Emp ID = E303.**

EmpID	Salary
E101	HR
E303	IT
E106	Sales
E301	Finance

Answer: Department of Employee ID E303

The department of Emp ID E303 is IT.

Excel Formula (using XLOOKUP):

Assuming:

- EmpID is in cells A2:A5
- Department is in cells B2:B5

=XLOOKUP("E303", A2:A5, B2:B5)

Explanation:

- "E303" → the value to look up
- A2:A5 → lookup array (EmpID column)
- B2:B5 → return array (Department column)

Why XLOOKUP is Used:

- It replaces older functions like VLOOKUP and HLOOKUP.
- It works in any direction (left-to-right or right-to-left).
- It returns an exact match by default.
- It is easier to read and more flexible.

Final Answer: Department of Emp ID E303 = IT