# 📌 Final Exam: Data Analysis Workflow (Excel → SQL → Power BI and Python)

**(Answer all Questions)**

## 🏢 Company Background: TechNova Retail Inc.

TechNova Retail Inc. is a fast-growing electronics and consumer goods company with multiple departments handling sales, marketing, IT, finance, HR, operations, and customer support.

Recently, TechNova's leadership has raised concerns about:  
🔹 Sales performance variations across employees and regions.  
🔹 Customer complaints & satisfaction scores affecting retention.  
🔹 HR’s need for better salary benchmarking & performance tracking.  
  
The Data Analyst (that’s you!) has been tasked with analyzing employee performance, financial data, and customer service trends using:  
✅ Excel for initial data preparation  
✅ SQL for advanced data querying & insights  
✅ Power BI for interactive dashboards & visual storytelling

## 📌 Project Phases

## 🔹 Phase 1: Data Cleaning & Lookup Functions in Excel

### 📝 Task 1: Data Formatting & Cleaning

✅ Convert 'Hire Date' to a proper date format.

✅ Replace 'N/A' values with NULL for better SQL compatibility.

✅ Extract 'First Name' and 'Last Name' into separate columns.

✅ Convert all employee names to Proper Case (First Letter Capitalized).

### 📝 Task 2: Employee Performance Classification (IF, AND, OR Operators)

✅ Add a new column called 'Sales Performance Status':

* - If an employee is in Sales, and their Monthly Sales exceed their Target, classify as 'High Performer'.
* - If an employee is in Sales, but their Monthly Sales are below 80% of their Target, classify as 'Needs Improvement'.
* - Otherwise, classify as 'Meets Expectations'.

✅ Add a new column called 'Customer Handling Rating' (For Sales & Customer Support employees):

* - If Customer Rating is 4 or 5 AND Complaints ≤ 3, classify as 'Excellent Service'.
* - If Customer Rating ≤ 3 OR Complaints > 5, classify as 'Needs Improvement'.
* - Otherwise, classify as 'Satisfactory'.

## 🔹 Phase 2: SQL Analysis & Insights

### 📝 Task 3: Import Data into SQL

✅ Create a table for Department Managers and link it to the Employees table.

### 📝 Task 4: Sales & Performance Insights

✅ Retrieve the first 10 records from the employee table.

✅ Count the number of employees per department.

✅ Find the average salary per department.

✅ Retrieve the top 10 highest-earning employees.

✅ Find the number of high-performing employees per department.

### 📝 Task 5: Customer Complaints & Satisfaction Analysis

✅ Find the departments with the most customer complaints.

✅ Count employees with Excellent Service ratings.

✅ Identify employees with poor customer handling (Low rating & high complaints).

## 🔹 Phase 3: Data Visualization in Power BI

### 📝 Task 6: Build Interactive Dashboards in Power BI

✅ connect to SQL Server to get your Analyzed dataset into Power BI.

✅ Create a Sales report page with:

* - KPI Cards for Total Sales, Total Employees, Avg Salary.
* - Bar Chart for Sales by performance status.
* - Pie Chart for Employee Performance Status Distribution.
* - Table Visual for Top 10 Sales Performers.
* ✅ Create a Customer Service report page with:
* - KPI Card for Avg Customer Rating.
* - Bar Chart for Total Complaints by Department.
* - Slicers for filtering by Department & Performance Category.
* ✅ Create an HR report page with:
* - Avg Salary by Department (Bar Chart).
* - Employee Satisfaction Score Distribution (Histogram).
* - High vs. Low Performers Comparison (Stacked Bar Chart).

**Create an interactive dashboard with key insights from the report pages**

## 📌 Final Deliverables

✔️ Excel file with cleaned data & formulas.

✔️ SQL queries & analysis results.

✔️ Power BI Dashboard (PBIX file) summarizing insights.