Exam Title: **"SkyRoutes Profit Lab: Identifying Profitable Airline Routes"**

👩‍🎓 **Exam Type:** Business-Oriented Data Analysis Practical (SQL + Excel/Power BI)

⏳ **Duration:** 3 Hours

📦 **Dataset:** A gigantic CSV dataset: **AirlineRoutesData.csv** (Generate from AI tool)

📝 Project Definition

You are hired as a data analyst for **SkyRoutes Airlines**, which operates across various international and domestic routes. Your task is to **analyze the profitability** of routes based on **passenger volume, cost, revenue**, and **operational metrics**.

💡 Instructions & Evaluation Criteria

⚠️ **Note:** You **must** use SQL for data analysis and then use Excel **OR** Power BI to visualize key metrics. Present your insights through charts and tables.

📂 Dataset File:

AirlineRoutesData.csv

Column Name	Description
FlightID	Unique identifier for each flight
RouteCode	Code representing route (e.g., BOM-DEL)

Origin	Departure airport
Destination	Arrival airport
FlightDate	Date of the flight
FlightDurationMins	Total flight duration in minutes
AircraftType	Type of aircraft used
SeatsAvailable	Total seats offered on the flight
SeatsSold	Number of tickets sold
Revenue	Total revenue from ticket sales
OperationalCost	Cost to operate the flight

🔧 PART 1 – SQL-Based Analysis

Perform the following queries:

1. ✈️ List top 10 most frequent routes based on number of flights.
2. 💰 Calculate average revenue, cost, and profit per route.
3. 📉 Identify underperforming routes where average profit is negative.
4. 📊 Calculate seat occupancy % for each route.
5. 📆 Extract monthly trend of profit per route.
6. 🧱 Compare profitability of domestic vs international routes.
7. 📋 Rank routes based on revenue per minute of flight duration.

Save your results in CSV format or import directly into Excel/Power BI.

📈 PART 2 – Excel or Power BI Dashboard

Use either the SQL results or the original dataset to create a **route profitability dashboard** that includes:

1. **Bar Chart** – Top 10 most profitable routes.
2. **Map** – Show Origin-Destination pairs (use latitude/longitude if provided).

3. **Line Graph** – Monthly profit trend.
4. **Gauge/Donut** – Average occupancy rate.
5. **Stacked Column Chart** – Cost vs Revenue per route.

Add slicers/filters for:

- AircraftType
- Flight Month
- RouteCode

📤 Final Submission Checklist

File	Description
SkyRoutesAnalysis.sql	SQL script for all queries
RouteProfitDashboard.xlsx or .pbix	Visual dashboard
RouteInsights.txt	5–6 lines summarizing findings

💡 Example Insights to Derive

- Which aircrafts are operating on loss-making routes?
- Which routes generate high revenue but low profit?
- Are long-haul flights more profitable than short-haul?
- Monthly trends showing demand peaks or cost spikes

Practical Exam
BUSINESS CASE STUDY

BRING ON YOUR CODING ATTITUDE