BASICS OF DATA ANALYTICS

Q.1- *Define the role of a Data Analyst in your own words. What value do they bring to an organization?*

Answer~ A Data Analyst looks at numbers and information to find out what they really mean. They help a company understand what's working well, what's not, and what can be improved.

Their main value is turning confusing data into clear answers so the organization can make smarter decision, save time, and grow in the right direction.

Q.2- *List three tools commonly used by Data Analyst and explain what each is mainly used for.*

Answer~ **1. MICROSOFT EXCEL-** Helps data analysts sort, clean, and study data. It's great for doing quick calculations, making charts, and spotting simple trends.

2. SQL- Used to find and collect specific information from big databases. It's like asking a smart question and getting just the data you need in return.

3. Tableau- Helps turn numbers into colorful charts and dashboards so everyone can easily see patterns and understand the story behind the data.

Q.3- *Write the end-to-end analytics workflow in the correct order and briefly explain each step.*

Answer~ **END-TO-END ANALYTICS WORKFLOW**

1. **Define the problem-**

   First, figure out what question or issue needs to be solved. You can't find answers if you don't know what's the problem is.

2. **Collect the data-**

   Gather the right data from different sources, like databases, surveys, or reports.

3. **Clean the data-**

   Fix mistakes, remove duplicates, and make sure everything is accurate and in the right format.

4. **Analyze the data-**

   Study the data using tools or techniques to find patterns, trends, or insights.

5. **Visualize and interpret-**

   Study the data using tools or techniques to find patterns, trends, or insights.

6. **Share insights-**

   Present your conclusions and recommendations to help the company make better decisions.

Q.4- *What is Prompt Engineering, and explain any two types of prompts used in Generative AI?*

Answers~ Prompt Engineering means writing clear and smart questions or instructions so that AI tools give better and more accurate answers. It's like knowing how to talk to AI in a way it understands best.

Two common types of prompts are:

1.Instruction-based Prompt-

We tell the AI exactly what to do. For example, "Explain this in simple words" or "Words a short paragraph about climate changes".

2.Role-based Prompt-

We give the AI a role to play. For example, "Act like a teacher and explain Data Analyst." This helps the AI respond in the right style and tone.

Q.5- *What are the key difference between a Business Analyst and a Data Analyst in terms of roles, responsibilities, and focus?*

Answers~ **1. Business Analyst (BA):** Focuses on the business side—figuring out what the company needs, how to improve processes, and suggesting solutions. They talk to teams, gather requirements and make sure projects solve the right problems.

2. Data Analyst (DA): Focuses on the data—collecting, cleaning, and studying it to find patterns and insights. They create reports and charts to help the company make smart decisions.

IN SHORT: BAs ask *"What does the business need?"*, DAs ask *"What does the data say?"*

Q.6- *Explain any three AI-Powered ETL (Extract, Transform, Load) tools and how they are used in analytics.*

Answer~ **1. Matillion:** It helps pull data from different places, clean it up, and put it all together. The AI part helps you build and fix data flows faster. Basically, it does the heavy lifting so analysts can spend more time understanding data instead of fighting with it.

2. Talend (Qlik): It connects all your data, checks if it's correct, and fixes errors. Its AI spots bad and missing data and even tells you how trustworthy your data is. That way, the reports you make actually make sense.

3. Informatica (CLAIRE AI): It's like a super smart helper for big companies that deal with tons of data. The AI, called CLAIRE, figures out the best way to organize and clean data automatically. That means less manual work and fewer mistakes.

IN SHORT: All three tools use AI to make handling data faster, easier, and less boring—so people can focus on finding insights, not cleaning up digital chaos.

Q.7- *Give three applications of Data Analytics across different industries and explain how it creates value.*

Answers~ **1. Healthcare:** Data analytics helps doctors and hospitals track patient records, spot health trends, and even predict diseases early.

Value: It saves lives by catching problems sooner, reduces treatment costs, and helps doctor makes better decisions.

2. Retail: Stores use data to study what people buy, when they buy it, and what they might want next.

Value: It helps companies give better offers, manage stock, and make customers feel understood—so they come back again.

3. Banking and Finance: Banks use data analytics to detect fraud, understand spending patterns, and decide who's safe to lend money to.

Value: It keeps customer accounts safe, reduces losses, and helps banks make smarter financial choices.

Q.8- *Explain the evolution of analytics, highlighting the different stages from Descriptive to Generative AI.*

Answers~ Analytics has changed a lot over the years—kind of like how people went from using paper maps to using GPS.

1. Descriptive Analytics – "What happened?"

This stage gave answers and suggestions. For example, "If sales are dropping" or "Send reminders to inactive customers."

2. Diagnostic Analytics – "What's likely to happen next?

This people started asking *why*. Analysts began digging deeper to find reasons—like why sales went up or why customers stopped buying.

3. Predictive Analytics – "What's likely to happen next?"

After that, analytics got smarter. Using past patterns, it started predicting what might happen—like forecasting next month's sales or trends.

4. Prescriptive Analytics – "What should we do now?"

This stage gave answers and suggestions. For example, "If sales are dropping, try offering a discount" or "Send reminders to inactive customers."

5. Generative AI – "Let's create something new."

Now, with AI, analytics doesn't just study data—it *creates*. It can write reports, explain results, make visuals, and even come up with new ideas on its own.