**1. What do you mean by BI? Explain.**

Business Intelligence is a process of extracting various insights from existing and past data in various form and reporting them to stakeholders about their business problems and possible solution in the form of reports and dashboards to optimize the business performance. It takes each and every data from Business stake holders and answers to various questions like what has happened?, why it happended, why it didn't happen?, what might be a solution? etc.,

It combines Business Analytics, Data mining, Data visualization, Data tools and Infrastructure and helps organizations to take better data driven decisions.

Tools used : Power BI, Tableu, Pentaho, Qlikview

**2. How Power-BI helps in BI, and how does it help Analysts? Explain.**

Power BI is Business Intelligence tool developed and maintained by Microsoft which is capable of handling huge amount of Data in much faster way. It is an advanced version of Microsoft excel with advanced analytic options and service.

* power BI is capable of getting data from multiple sources from SQL, cloud, on-premise data, or any file type such as .xls, .csv, .tsv etc., A major task of analyst is to integrate data from multiple source and keep it in one comfortable and handy place to analyze them.
* Another way power BI helps analyst is in publishing Reports/Dashboards to a workspace/stakeholder community that they can interact with reports to see their performace analysis or any other information
* Data visualization becomes more easier in just few clicks, drag and drops. Power BI comes with 180+ visualization techniques which are interactive, formattable to create colorful plots and graphs.
* Power Query editor which heart of Power BI makes a record of changes what the analyst is doing, So that if they identify error and need to make any changes, analyst can revert back to any specific step directly and make changes in all subsequent steps automatically.
* Power BI creates a Data model how different data is related to each other
* Data ingestion from various sources, All the data such as reports/Dashboards are very secure

**3. Explain Descriptive analytics?**

Before explaining Descriptive Analytics, let me say a little about Descriptive Statistics. Statistics is calssified as Descriptive statistics and Inferential statistics. Descriptive statistics measures various metrics such as Mean, Median, Mode, Variations.

Descriptive Analytics imputes Descriptive statistical methods in real time data to know the current stance of business. It explains "What we have?". It can be used to evaluate current Business performance, identify patterns in Historical data, identify where business lags. It is used majorly to generate KPIs (Key performance Indicator) in organizations.

For example, An e-commerce organization may find average sales monthwise or yearwise(mean or median), mostly bought products in different accessories (mode), Frequency of customer buying products(count).

Another example for KPI is an Educational Institute organizing and maintaining professors working hours, detials such as Conference conducted, research papers published in journals, etc to calculate KPI.

**4. Explain Predictive analytics?**

Predictive Analytics is a process of using Mathematical and Machine Learning models and predicting the futuristic events that are more likely to occur if current business performance continues with a reasonable degree of accuracy to take preventive actions if predicctions might bring huge loss. It explains "What will occur?".

Time series models and charts are used to forecast futuristic events. Predictive Analytics are much important for an industry to sustain in market to know the future threats and business problems. Predictive Analytics uses Descriptive statistical results in Machine Learning/Mathematical models.

An example for Predicting Analytics is Covid cases prediction, which is a recently used by Government to take preventive mechanisms. Details such as number of covid positive cases region wise, degree of spreading, deaths occured are used to predict information like No of cases in next week or when the peak number of cases will occur or when the next wave might occur etc.

**5. Explain prescriptive analytics?**

Let's first understand the meaning of "prescription" in Prescriptive Analytics. We all may be familiar with the term Doctor prescription. It is a sheet prescribed by Doctor which contains details of medicine to cure respective patient's health disorder. In prescriptive Analytics, the word "solve" replaces "cure".

Prescriptive Analytics used Descriptive and Predictive Analytics result to propose(prescribe) an optimal plan or solution that might reduce or avoid the negative impact or improve current performance of Business. It explains "What should we do?". It leads organizations to success. Data Science expert team analyzes the data deeply to provide a way to business stakeholders to improve their strategy and increase profit. To say in layman terms, what should be the data to get the targetted outcome.

A real life example, SideTrade uses prescriptive analytics to deepen their understanding of a client’s true payment behavior. Through prescriptive analytics, SideTrade is able to score clients based on their payment track-record. This creates transparency and accuracy so that SideTrade and its clients can better account for costly payment delays.

**6. Write five real-life questions that PowerBi can solve.**

1. A Telephone network organization may look around for a reason for **"why customers shift to other networks?"** by using the details of customers and their feebback who changed their network to other network operators.
2. An E-commerce company might dig their data to see drop is sales, patterns in sales, understand customer buying behavior to know reason **"Why sales is not increasing?"** despite demand is there in market.
3. A software product company may need to know **"Why should users opt competitor company products/services?"** to maintain their current product sustainability and provide better service to their users.
4. Government may need to know **"About what topic are most people talking about?"** during any social evil event occurs that led to burst in protests and revolts to stop the spread of false information or to to mute people voices in specific regions to outside regions.
5. A Dataware warehouse will need to know **"Why security breach occured in database?, what data is lost?"** to concentrate on data recovery and tightening the security layer of database.