**1. What is Power BI and how does it differ from Excel?**

Power BI is a business analytics tool for creating interactive reports and dashboards, handling large datasets efficiently. Excel is a spreadsheet tool mainly used for data analysis and static reporting.

**2.Explain the concept of data modelling in Power BI.**

Data modelling involves creating relationships between tables, defining hierarchies, and building calculated columns or measures for better data analysis and reporting.

**3. What are the different types of connections available in Power BI?**

* Mode (loads data into memory)
* Direct Query (real-time querying)
* Live Connection (directly connects to certain data sources).

**4. How do you handle data transformation in Power BI?**

Performed using Power Query, where you clean, reshape, and merge data through an intuitive interface that generates M code.

**5.What is DAX (Data Analysis Expressions) and why is it important in Power BI?**

Data Analysis Expressions is a formula language used to create calculations (e.g., measures and calculated columns) in Power BI, enabling advanced data analysis.

**6.Can you explain the difference between calculated columns and measures in Power BI?**

* Calculated Columns: Stored in the data model, static.
* Measures: Calculated on the fly, dynamic based on report context.

**7. How do you handle relationships between tables in Power BI?**

Define table relationships in the Model view using primary and foreign keys. Set up cardinality (e.g., one-to-many) and cross-filtering direction.

**8.What is the purpose of a Power BI Gateway?**

A gateway facilitates secure data access from on-premises data sources to Power BI Service. It allows data refresh and live queries on cloud reports.

**9. How can you schedule data refresh in Power BI Service?**

In Power BI Service, set a refresh schedule for datasets (daily, weekly, etc.) through the dataset's settings.

**10.Explain the concept of row-level security in Power BI.**

RLS restricts data visibility at the row level by applying filters through roles, controlling which data users can see based on their roles.

**11. What is the Power BI Desktop and how does it differ from Power BI Service?**

* Power BI Desktop: Development tool for creating reports.
* Power BI Service: Cloud-based platform for sharing, collaboration, and scheduling data refresh.

**12. Explain the concept of Direct Query in Power BI.**

Direct Query allows Power BI to retrieve data directly from the data source in real-time without storing it in memory. This is ideal for large datasets or when up-to-date data is critical, though it may result in slower performance compared to Import Mode.

**13. What are Power BI templates and how are they useful?**

Power BI templates (pit files) save the structure of a report, including data model, visuals, and queries, but without the data itself. They are useful for reusing report structures with different datasets.

**14. How do you handle incremental data refresh in Power BI?**

Incremental refresh in Power BI allows you to refresh only new or updated data instead of the entire dataset, improving performance and reducing refresh time, especially for large datasets.

**15. What is the role of Power Query in Power BI?**

Power Query is the ETL (Extract, Transform, Load) tool in Power BI used to clean, reshape, and prepare data for analysis through a user-friendly interface that generates M code.

**16. Explain the difference between calculated columns and calculated tables in Power BI.**

* **Calculated Columns:** Created within a table, they apply calculations row by row.
* **Calculated Tables:** Entire new tables generated using DAX expressions, often aggregating or filtering data from other tables.

**17.** **How do you create custom visuals in Power BI?**

Custom visuals can be created using the Power BI Developer Tools, which allow developers to use TypeScript and JavaScript to build and package visuals that can be imported into Power BI.

**18. What are the best practices for optimizing performance in Power BI?**

* Use Import Mode over Direct Query when possible.
* Reduce the number of visuals on a report page.
* Optimize DAX calculations.
* Limit data loaded into the model.
* Use query folding in Power Query.

**19. How can you integrate Power BI with other Microsoft products like Azure and Office 365?**

Power BI integrates with Azure for data storage, machine learning, and advanced analytics. It connects with Office 365 for seamless use of Excel, SharePoint, and Teams, enabling collaboration and data sharing across Microsoft’s ecosystem.

**20. Explain the concept of aggregations in Power BI.**

Aggregations allow you to pre-aggregate large datasets at different levels of detail, reducing the amount of data that needs to be queried. This improves performance by enabling summary-level queries while still allowing drill-down to detailed data when needed.

**21. How do you handle error handling and data quality in Power BI?**

Use Power Query to detect and handle errors during data transformation. You can apply rules to cleanse data, replace null values, and track data quality issues. DAX expressions can also be used to handle errors in calculations.

**22) What is the purpose of Power BI Embedded and when would you use it?**

Power BI Embedded is an Azure service that allows developers to embed Power BI reports and dashboards into custom applications. It is useful for ISVs or developers who need to integrate Power BI analytics within their own products or customer-facing portals.