1. How does Power BI handle large datasets in the Online Service, and what is the role of Premium Capacity?

Power BI Service manages large datasets using several optimizations:

- **VertiPaq in-memory compression** significantly reduces storage size and accelerates query performance.
- **Incremental refresh and real-time refresh** ensure only recent or changed data is processed, improving efficiency.
- **Aggregations** allow Power BI to summarize large fact tables for faster query responses.

Premium Capacity plays a critical role by providing:

- Much higher dataset size limits (up to 400+ GB).
- Dedicated compute resources for faster performance.
- More frequent refreshes (up to 48 per day).
- XMLA read/write access for advanced data modeling and enterprise BI management.

This makes Premium suitable for large-scale, mission-critical datasets.

2. What are the differences between Import mode, DirectQuery, and Live Connection in Power BI Service?

Import Mode

- Data is fully stored in the Power BI in-memory engine.
- Fastest performance.
- Supports the full DAX and modeling capabilities.
- Requires scheduled refresh.

DirectQuery

- Data remains in the source system (SQL, Synapse, Databricks, etc.).
- Each visual generates live queries to the data source.
- Slower performance depending on source infrastructure.
- Limited DAX and modeling features.
- Supports near real-time analytics.

Live Connection

- Connects directly to an existing semantic model (Power BI dataset or Analysis Services).
- No local model is created in Power BI Desktop.
- Calculations and processing occur in the source model.
- Ideal for centralized enterprise BI models.

3. Explain deployment pipelines in Power BI Online. What stages do they include?

Deployment pipelines allow controlled, structured promotion of BI content through environments.

The pipeline consists of **three stages**:

1. **Development** – Initial workspace where reports, datasets, and models are created and tested.
2. **Test** – Used for quality assurance, validation, and UAT (User Acceptance Testing).
3. **Production** – Final environment where content is accessed by end users.

Pipelines ensure version control, change management, and consistent deployment across environments.

4. How can Power BI Service integrate with Microsoft Teams or SharePoint for collaboration?

Microsoft Teams

- Reports can be added directly to Teams channels using the **Power BI App**.
- Users can view, discuss, and collaborate on reports within Teams.
- Supports notifications and data-driven conversations.

SharePoint Online

- Reports can be embedded using the **Power BI web part**.
- Users can view interactive reports directly inside SharePoint pages.
- Maintains security and permissions from Power BI Service.

5. What is the XMLA endpoint in Premium and how does it benefit developers or enterprise BI teams?

The **XMLA endpoint** provides an interface for external tools (SSMS, Tabular Editor, DAX Studio, Excel) to connect to Power BI semantic models.

Benefits include:

- Advanced data modeling and enterprise-grade development.
- Partition management for large datasets.
- Automated deployment and version control.
- Performance optimization using professional tools.
- Full read/write access in Premium or PPU workspaces.

This brings Power BI models to the same level as Azure Analysis Services.

6. Describe how usage metrics and audit logs work in Power BI Service.

Usage Metrics

- Show which reports/dashboards are viewed most often.
- Provide insights on user activity, engagement, and popular content.
- Help admins identify unused or high-impact reports.

Audit Logs

- Available in Microsoft 365 Admin Center.
- Track actions such as:
    - Viewing, sharing, exporting, deleting content
    - Dataset refresh operations
    - Permission and workspace changes
- Useful for governance, compliance, security, and monitoring.

7. How do you manage workspace access and permissions for different users?

Power BI workspaces support these built-in roles:

- **Viewer** – Can only view content.
- **Contributor** – Can edit reports and create content.
- **Member** – Can publish, edit, and manage datasets.
- **Admin** – Full control over workspace settings, permissions, and governance.

Permissions allow fine-grained control over who can view, edit, publish, or manage workspace items.

8. How can data governance be enforced in Power BI Service?

Data governance can be ensured through:

- **Sensitivity labels** (Confidential, Highly Confidential).
- **Row-Level Security (RLS)** for role-based access.
- **Dataset endorsement** (Promoted/Certified).
- **Data lineage and impact analysis** tools.
- **Admin portal policies** (sharing restrictions, export controls).
- **DLP (Data Loss Prevention)** rules.
- **Workspace roles** to enforce limited access.

These features help maintain secure, trustworthy, and compliant BI environments.

9. What are the limitations of Row-Level Security when using DirectQuery or Live Connection?

- Performance may degrade because filtering is pushed back to the data source.
- Some advanced DAX expressions are not supported.
- With Live Connection, RLS must be defined in the source model (Analysis Services).
- Query load on the source database increases.
- Limited modeling flexibility in these modes.

10. Explain how you can refresh a dataset via Power Automate or REST API.

Power Automate

- Use the **"Refresh a dataset"** action.
- Can be triggered by a schedule, a button, or events (SharePoint updates, email arrival, etc.).
- Supports automation without code.

REST API

Send a POST request to the dataset refresh endpoint:

POST https://api.powerbi.com/v1.0/myorg/datasets/{datasetId}/refreshes

This allows refreshes from:

- Azure Functions
- DevOps pipelines
- Custom applications
- Scripts or automation tools

Provides full programmatic control over dataset refresh.