**Why should one use Azure Key Vault when working in the Azure environment? What are the alternatives to using Azure Key Vault? What are the pros and cons of using Azure Key Vault?**  
Azure Key Vault is used to keep passwords, API keys, and other sensitive data secure so they aren’t stored directly in code. It works well with Azure services and helps control access easily. Alternatives include storing secrets in environment variables or using third-party tools like AWS Secrets Manager. The biggest advantage of Key Vault is better security and automation, but it can slightly slow down secret retrieval and adds a small cost.

**How do you achieve the loop functionality within an Azure Data Factory pipeline? Why would you need to use this functionality in a data pipeline?**  
Looping in Azure Data Factory is done with the **ForEach** activity to process multiple items one by one and the **Until** activity to repeat a task until a condition is met. This is useful when dealing with multiple files or automating tasks instead of setting them up manually.

**What are expressions in Azure Data Factory? How are they helpful when designing a data pipeline (please explain with an example)?**  
Expressions allow pipelines to use dynamic values instead of fixed ones. For example, instead of writing a file name manually, an expression can generate a new one each day using the current date. This helps automate pipelines and reduces manual updates.

**What are the pros and cons of parametrizing a dataset in an Azure Data Factory pipeline’s activity?**  
Parameterizing a dataset makes pipelines more flexible because they can handle different data sources without changes. This makes things easier to maintain, but it can also make debugging harder since values are always changing.

**What are the different supported file formats and compression codecs in Azure Data Factory? When will you use a Parquet file over an ORC file? Why would you choose an AVRO file format over a Parquet file format?**  
Azure Data Factory supports formats like CSV, Parquet, Avro, and ORC. Parquet is great for fast data analysis, ORC works well in Hive-based systems, and Avro is better for streaming and transferring data because of its simple format.