1. **What database models do you know?**

Relational databases – Represent a bunch of tables together with the relationships between them.

1. **Which are the main functions performed by a Relational Database Management System (RDBMS)?**

**RDBMS typically implement creating / deleting / altering tables and relatioships between them**

**It can add, change, search and retrieve of data stored in the tables**

**Support for the SQL language and has Transaction management**

1. **Define what is "table" in database terms.**

**Table consist of data, arranged in rows and columns.**

1. **Explain the difference between a primary and a foreign key.**

Primary key is a column of the table that uniquely identifies its rows.

Foreign key is an identifier of a record located in another table(its primary key)

1. **Explain the different kinds of relationships between tables in relational databases.**

**One-to many – example country / towns**

**Many-to-many – example student / course**

**One-to-one – example human / student**

1. **When is a certain database schema normalized? What are the advantages of normalized databases?**

Normalization removes repeating data

1. **What are database integrity constraints and when are they used?**

**Integrity contrains ensure data integrity in the database tables and enforce data rules which cannot be violated.**

1. **Point out the pros and cons of using indexes in a database.**

**Pros: speed up searching of values in a certain column or group of columns**

**Cons: Adding and deleting records in indexed tables is slower.**

1. **What's the main purpose of the SQL language?**

**Creating, altering, deleting tables and other objects in the database**

**Searching, retrieving, inserting, modifying and deleting table data (rows)**

1. **What are transactions used for? Give an example.**

**Transactions are sequence of database operations which are executed as a single unit**

**Either all of them execute successfully or none of them is executed**

**Example : A bank transfer from one account into another (withdrawal + deposit)**

**If either the withdrawal or the deposit fails the entire operation should be cancelled**

1. **What is a NoSQL database?**

**Use document-based model (non-relational)**

**Schema-free document storage**

**Still support CRUD operations  
(create, read, update, delete)**

**Still support indexing and querying**

**Still supports concurrency and transactions**

1. **Explain the classical non-relational data models.**

**Data stored as documents**

**Single entity(document) is a single record**

**Documents do not have a fixed structure**

1. **Give few examples of NoSQL databases and their pros and cons.**

**Highly optimized for append / retrieve**

**Great performance and scalability**