Q. What are the features of NoSQL databases?
Features of NoSQL databases:

1. Unlike SQL-like databases, NoSQL databases are schema-less.

2. They have support for structured as well as unstructured data.

3. They do not use the relational model.

Q. What are the types of NoSQL databases?
Types of NoSQL databases:

1. Key-value databases

2. Document databases

3. Column-family databases

4. Graph databases

Q. What is the full form of ACID?
A- Atomicity

C- Consistency

I- Isolation

D- Durability

Q. Name any 3 database models
1. Entity relationship model

2. Document model

3. Object model

Q. What is the full form of CAP theorem?
C - Consistency

A - Availability

P - Partitioning

Q. What is DBMS?

ANS: A Database Management System (DBMS) is a software package designed to store and manage databases.DBMS provides an environment that is both convenient and efficient to use.

Q. What are different aggregate functions in SQL

1. MIN : it returns the smallest value in the column
2. MAX : it returns the largest value in the column
3. SUM : returns the sum of column
4. AVG : returns the average of values in the column
5. COUNT : returns total number of values in column
6. COUNT(*): returns number of rows in the table.

Q. Explain basic MongoDB CRUD operations.

1. **Create** - The ' insert ' function adds a document to the collection

```
> post = {

        "title" : "My Blog Post",
        "content" : "Here's my blog post.",
        "date" : new Date()

       }

> db.blog.insert(post)
```

2. **Read** - To see just one document from a collection

```
> db.blog.findOne()
{
"_id" : ObjectId("4b23c3ca7525f35f94b60a2d"),
"title" : "My Blog Post",
"content" : "Here's my blog post.",
"date" : "Sat Dec 12 2009 11:23:21 GMT-0500 (EST)"
}
```

3. **Update** - To modify a document we use ' update ' function and the function takes two parameters,
the first is the criteria to find which document to update, and the second is the new document.

```
> db.blog.update({title : "My Blog Post"}, post)
```

4. **Delete** - To remove a document from a databse we use ' delete ' function.

```
> db.blog.remove({title : "My Blog Post"})
```

Q. What is DBMS?

ANS: A database management system (DBMS) is system software for creating and managing databases. The DBMS provides users and programmers with a systematic way to create, retrieve, update and manage data.

Q. What is RDBMS?

ANS: RDBMS stands for Relational Database Management System.

RDBMS is the basis for SQL, and for all modern database systems like MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.

A Relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model as introduced by E. F. Codd. **Q.** What do you mean by integrity constraints?
Integrity constraints are used to ensure accuracy and consistency of data in a relational database. Data integrity is handled in a relational database through the concept of referential integrity.

There are many types of integrity constraints that play a role in referential integrity (RI). These constraints include Primary Key, Foreign Key, Unique Constraints and other constraints.

Q. Which is the default database in mongodb?

ANS: 'test' is used as the default database in mongodb

Q. What are CRUD operations?

ANS: CRUD means the basic operations to be done in a data repository. Create, Read, Update and Delete are the four basic functions or CRUD operations. Alternate words are sometimes used when defining the four basic functions of CRUD, retrieve instead of read, modify instead of update, or destroy instead of delete.

Q. What are responsibilities of DBA?
The responsibilities of DBA are:

1. Designing schema
2. Deciding on the storage and access methods
3. Designing database searching strategies
4. Selecting database software and hardware.

5. Designing restart and recovery procedures to take care of system crashes.

Q. Name some advantages of DBMS over file processing systems?

1. Redundancy can be reduced.
2. Inconsistency can be avoided.
3. Data can be shared.
4. Integrity can be maintained
5. Data independence can be provided
6. Security restrictions can be applied.

Q. Name some advantages of DBMS over file processing systems?

1. Redundancy can be reduced.
2. Inconsistency can be avoided.
3. Data can be shared.
4. Integrity can be maintained
5. Data independence can be provided
6. Security restrictions can be applied.

Q. Define Data independence?

ANS: Data independence can be defined as the capacity to change one level of schema without changing the schema at the next higher level.

Q. Define Weak entity type?

- Entity type which cannot form distinct primary key from their attributes is called as Weak entity type. These type of entities are dependent on strong entity for primary key.
- For some weak entities we assign virtual primary key. Such virtual primary key of weak entity is called as a Discriminator.

Q. Give 2 difference between assertion and triggers.

- Difference between assertion and triggers:

Assertion	Triggers
An assertion is a Boolean-valued SQL expression that must be true at all times.	A trigger allows an action that may violate a constraint and hence it tests for the presence of the violation.
Assertions are easier for the programmer to use, since they	A trigger is a series of actions that are associated with certain events,

merely require the programmer to state what must be true.

such as insertions into a particular relation, and that are performed whenever these events arise.

Q. Define Normalization?

- Normalization is a method for designing a consistent relational database. The goal is to generate a set of relation schemas that allows us to store information without unnecessary redundancy, ensures data integrity and also allows us to retrieve information easily.
- It is a step by step process that puts data into tabular form by removing duplicated data from the relation tables. Normalization is a reversible process.

Q. Define ACID properties?

The following are the ACID properties:

- Atomicity. A transaction is an atomic unit of processing; it should either be performed in its entirety or not performed at all. Examples are withdrawing money from your account, making an airline reservation.
- Consistency: Execution of a transaction in isolation preserves the consistency of the database.
- Isolation. A transaction should appear as though it is being executed in isolation from other transactions, even though many transactions are executing concurrently.
- Durability or permanency. The changes applied to the database by a committed transaction must persist in the database. These changes must not be lost because of any failure.

Q. Define Referential Integrity constraint?

ANS: If two tables are in a primary key to foreign key relationships, the foreign key values in the table that contains them can be said to refer to the corresponding primary key values in the other table. This structure imposes an important constraint on the correctness of data stored in the tables, is known as referential integrity.

Q. What is Generalization?

ANS: In simple terms, Generalization is a process of extracting common characteristics from two or more classes and combining them into a generalized

superclass. So, it is a bottom up approach as two or more lower lever entities are combined to form a higher level entity.

Q. What are the ways to store data in a database?

ANS: Data can be stored as key-value pairs, documents, graphs and columns.

Q. Define Generalization?

- Generalization is a process in which we differentiate among several entity types identifying their common features and generalizing them to a single super class of which original entity type are special attributes.
- It is a reverse process of specialization or this is bottom up approach of Superclass/subclass relationship.

Q. Explain any 2 difference between file processing and Database management system

File Processing System	Database management system
A file-processing system coordinates only the physical access to the data.	A database management system coordinates both the physical and the logical access to the data.
Redundancy cannot be controlled in file system.	Redundancy is controlled in database management system.

Q. Define total participation

ANS: In total participation every object in an entity must participate in a relationship. The total participation is indicated by a dark line or double line between entity and relationship.

Q. Define partial participation

ANS: In partial participation, more than one object in am entity may participate in a relationship. The partial participation is indicated by a single line between entity and relationship.

Q. What is an attribute?

ANS: The various properties that describe an entity are known as an attribute, The attribute value that describes each entity becomes a major part of data stored in database.

Q. Defin foreign key?

- A column or collection of columns in one table whose value must match the primary key in some other table is called a foreign key.

Q. Define Set intersection operator

- The Set intersection operator finds out all rows that are common in both result of Query1 and in the result of Query2.
- It does not eliminate all duplicate rows and they are printed in result expression.

Q. Define Natural join?

- A Natural join returns all rows by matching values in common columns having same name and data type of columns and that columns should be present in both tables.

Q. Define Super key?

ANS: When additional attributes are added to a key attribute, the resulting combination would still uniquely identify a single record in a table. Such augmented keys are called Super keys.

Q. Define Division operator?

- The Division operator operates on two tables that must have common columns between them.
- The relational divide operator returns the records in one record set that have values that match all the corresponding values in the second record set.
- The output of divide operation in one column in which values of common column in both table match.