

## Answer Script

### Question No. 01

1. Why is composite key called composite primary key? Describe with proper explanation. - **10**

### Answer No. 01

**Primary Key:** A primary key is a column or a combination of columns in a relational database table that uniquely identifies each row in the table. Each row in a table is given a unique ID using a special kind of key. Primary keys must be unique and cannot have null values.

**Composite:** A composite key is a primary key that is made up of two or more columns. It is called a composite key because it is a combination of two or more columns that together uniquely identify a row in a table.

#### University Student Info

ID	Name	Department
505	Afsar	CSE
204	Tarek	CSE
505	Anwar	EEE

In the above, we have a university student info table. This table has three keys: ID, Name, Dept. ID is the primary key for this table. Because we can identify a student by id. Two students don't have the same id in the same department.

In the above table we have the same two id 505. If id is our only primary key then we could not identify any student for this 505 id. Because 505 id One student's name is "Afsar" and another student's name is "Anwar". They are two individual person but their id is the same. So, we need another primary key for identifying them. Name couldn't be the primary key, because Their names should also be the same.

We can use Dept. as the another primary key for identify individual student. Because in the same department two student doesn't have the same id. So, here Dept. is the composite key.

In the above table, both ID and Dept. is the composite primary key.

### Question No. 02

2. What is the benefit of using relational database over non-relational database? - 10

### Answer No. 02

**Relational Database:** A relational database is a database that stores and manages data in the form of tables. In a table, which consists of rows and columns, each row represents one data record. In a table, the columns define the many attributes of the data, and the rows contain the values for each attribute.

**Non-Relational Database:** A non-relational database is a database that does not use the tabular schema of rows and columns found in most traditional database systems. Non-relational databases use a storage technique that is specific to the requirements of the type of data being stored. For example, simple key/value pairs, JSON documents, or a network with edges and vertices can all be used to store data.

The relational database, which is a method of arranging data in a way that makes it simple to comprehend and administer, is the foundation upon which relational databases are built. The foundation of the relational model is the idea of relations, or tables with relationships to one another. This makes it simple to join and query data from various tables.

Relational databases are highly structured, easy to manage, and based on relational concepts. They store data in related tables, allowing easy querying and joining. The well-defined SQL query language simplifies data manipulation. Relational databases are widely supported, offering more tools and resources. They enforce data integrity through foreign keys and constraints, ensuring accuracy and consistency. They can be scaled horizontally, making them suitable for applications handling large amounts of data.

### Question No. 03

3. Explain foreign key with proper examples. If foreign key didn't exist, what would be the problem? - 10

### Answer No. 03

**Foreign Key:** A foreign key is a field in one table that refers to the primary key in another table. Foreign keys are used to establish relationships between tables in a relational database.

**Student**

ID	Name
101	Afsar
102	Anwar
103	Afsar

**Student's Info**

ID	Age	Result
103	23	5.00
102	21	4.50
101	22	4.75

The Student table has two keys: ID, Name. Name couldn't be the primary key, because two students can have the same name. But, two students couldn't have the same id. That's why here ID is the primary key.

In the second table we have three keys: ID, Age, Result. If this table doesn't have the ID key then we cannot identify which student's age is 23 and which student's result is 4.50. For uniquely identify the age and result we must need a primary key. Here ID is the primary key. Because in the same department two students don't have the same ID. That's why in this table we can use ID as the primary key.

But we can see ID is already a primary key in the Student table. In the student's info table for uniquely identifying the age and result we use ID as primary key which is already a primary key Student table. In the foreign key definition we know if we use one table primary key into the other table then we can say this key is foreign key.

If foreign keys didn't exist, there would be no way to enforce this constraint. This could lead to data integrity problems, such as results being created for students that don't exist.

Foreign keys are crucial in relational database design to ensure data integrity, make querying and manipulating data easier, and improve database security. Without them, data integrity problems could arise, such as assigning results to non-existent students. Additionally, foreign keys make it easier to insert invalid data, making the database more secure.

Question No. 04

4. What is the difference between database and MySQL? - 10

Answer No. 04

**The difference between Database and MySQL:**

Database	MySQL
1. A database is a collection of data organised in a way that makes it easy to access and use.	1. MySQL is a relational database management system (RDBMS) that runs as a server.
2. Database strengths are flexibility, scalability and performance.	2. MySQL strengths are speed, performance and reliability
3. Database weaknesses are complexity and security.	3. MySQL weakness is licensing costs.
4. It is designed to efficiently manage, store, and retrieve data.	4. MySQL is known for its speed, reliability, and ease of use.
5. Different types of databases exist, including relational, object-oriented, and NoSQL databases.	5. It offers a complete collection of features and tools for building, running, and protecting databases.
6. Database management systems (DBMS) like MySQL, Oracle, SQL Server, PostgreSQL, etc. can be used to implement databases, which offer a framework for storing and managing data.	6. Due to its popularity and interoperability with many different operating systems, MySQL is commonly utilized in online applications and frequently used as the default option by many developers.

Question No. 05

5. Suppose you have to make a table named student. The table will have the fields - **15**

- a. Name
- b. Roll
- c. Class
- d. Blood group
- e. Contact No
- f. Result
- g. Date of Birth
- h. Age

Write the datatypes used here

Answer No. 05

- a. Name : VARCHAR
- b. Roll: INT
- c. Class: VARCHAR
- d. Blood Group: VARCHAR
- e. Contact No: INT
- f. Result: FLOAT
- g. Date of Birth: DATE
- h. Age: INT

Question No. 06

6. Create a table in MySQL for the student table described in question 5.

**-15**

Answer No. 06

```
CREATE TABLE student(  
    Name VARCHAR(30),  
    Roll INT(10),  
    Class VARCHAR(15),  
    Blood_Group VARCHAR(4),  
    Contact_No INT(11),  
    Result FLOAT(4),  
    Date_of_Birth DATE,  
    Age INT(3)  
);
```

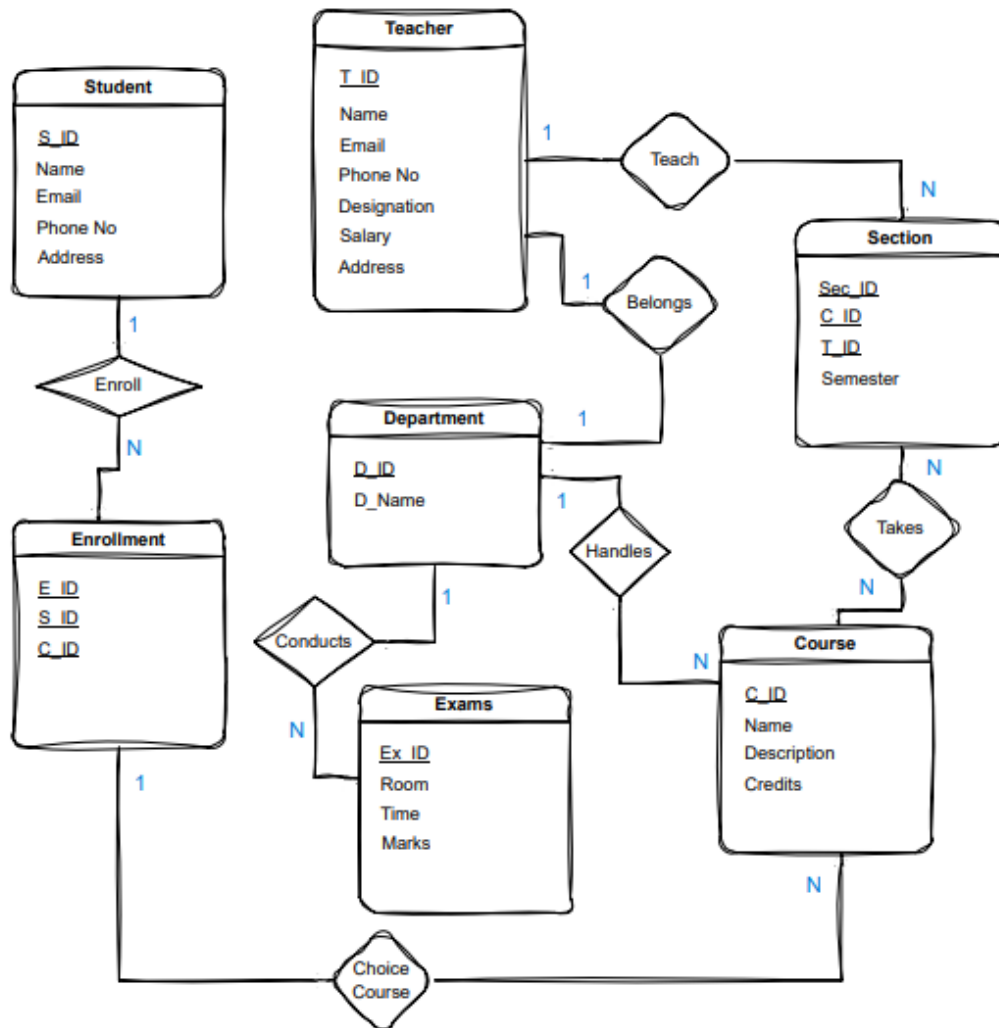
Question No. 07

7. Draw an ERD for a School/College management system.

- 20

Answer No. 07

**ER diagram of School/College Management System:**



Question No. 08

8. Rename the table named student to a name whatever you want.  
And then delete the table. Write the SQL syntaxes also. - **10**

Answer No. 08

```
RENAME TABLE student TO afsar;  
DROP TABLE afsar;
```