Student ID:	**Name:**

1. (2 points) Which of the following is a key advantage of using an RDBMS?
   A. Real-time data processing.
   B. Efficient storage of multimedia files.
   C. **Data integrity and consistency through data constraints.**
   D. Support for unstructured data.

2. (2 points) In a relation, a candidate key is:
   A. Any attribute that is unique for each tuple in the relation.
   B. **A minimal super key for the relation.**
   C. An attribute that is not used in any foreign key constraint.
   D. A key that is used for indexing purposes only.

3. (2 points) In a relational database, the primary key is used to:
   A. Identify foreign keys in other tables.
   B. Ensure referential integrity between tables.
   C. **Uniquely identify each row in a table.**
   D. Store the most important data in the database.

4. (2 points) In the context of an RDBMS, what is a foreign key?
   A. A key that uniquely identifies each row in a table.
   B. A key used to encrypt sensitive data.
   C. **An attribute that links two or more tables by referencing the primary key of another table.**
   D. A key used for sorting data in ascending order.

5. (2 points) If a relation has multiple candidate keys, which one is chosen as the primary key?
   A. The candidate key with the fewest attributes.
   B. The candidate key with the most attributes.
   C. The candidate key that is easiest to compute.
   D. **Any candidate key can be chosen as the primary key.**

6. (10 points) Consider a relational schema for a library database with the following tables:

   Books (Title, Author, ISBN)
   Members (Name, Email, Phone)

   Determine the candidate keys and select a primary key for each table in this schema. List all assumptions concisely.

   Books: ISBN can be selected as candidate key. As the only candidate key, it can be selected as a primary key.
   Members: Assuming email address are unique, we can select email as the candidate key. If we assume same for the phone then phone can also be a candidate key. Any of them can be selected as the Primary key.

Student ID:	**Name:**

1. (2 points) Which of the following is a key advantage of using an RDBMS?
   A. Real-time data processing.
   B. Support for unstructured data.
   C. Efficient storage of multimedia files.
   D. **Data integrity and consistency through data constraints.**

2. (2 points) In a relation, a candidate key is:
   A. **A minimal super key for the relation.**
   B. A key that is used for indexing purposes only.
   C. An attribute that is not used in any foreign key constraint.
   D. Any attribute that is unique for each tuple in the relation.

3. (2 points) In a relational database, the primary key is used to:
   A. **Uniquely identify each row in a table.**
   B. Identify foreign keys in other tables.
   C. Ensure referential integrity between tables.
   D. Store the most important data in the database.

4. (2 points) In the context of an RDBMS, what is a foreign key?
   A. A key used to encrypt sensitive data.
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   B. The candidate key with the most attributes.
   C. The candidate key that is easiest to compute.
   D. The candidate key with the fewest attributes.

6. (10 points) Consider a relational schema for a university database with the following tables:

   Student (FirstName, LastName, Email)
   Course (CourseName, Department, Capacity)

   Determine the candidate keys and select a primary key for each table in this schema. List all assumptions concisely.

   Solution:
   Student: Assuming email are unique, it can be a candidate key. As the only key, it can also be the primary key.
   Course: Assuming CourseName are not unique, as same course can be offered by different departments, we can have a candidate key of CourseName, Department. This can also be the primary key.