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Time: 1 hour
Using Calculator (No)

University of Palestine

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Using Dictionary (No)

Question One: (10 Marks)

1) What does the abbreviation **DML** stand for?
   a) Data Manipulation Language
   b) Database Manipulation Language
   c) Data Management Language
   d) Database Manipulation Learning

2) An attribute is _____.
   a) a collection of objects of the same type
   b) a characteristic of an entity
   c) a record of a file
   d) an event

3) A many-to-many relationship allows an occurrence of one entity type to be associated with _____.
   a) a single occurrence of the same entity type
   b) multiple occurrences of the same entity type
   c) a single occurrence of another entity type
   d) multiple occurrences of another entity type

4) The values of the primary key of a relation ____.
   a) cannot be unique
   b) may be unique or non-unique
   c) must be unique
   d) must consist of a single attribute

5) In a university setting, every professor reports to another professor who is the department chair. This is a _____ relationship.
   a) one-to-one unary
   b) many-to-many
   c) one-to-many
   d) one-to-many unary

6) Which of the following is a **super key** without redundancies?
   a) Candidate key
   b) Foreign key
   c) Key attribute
   d) Composite key

7) Data redundancy _____.
   a) can occur across multiple tables but not within a single table.
   b) can occur within a single table but not across multiple tables.
   c) is a positive feature in the simple table environment.
   d) None of the above.

8) In the relational model, **Degree** is _____.
   a) the number of attributes in a relation.
   b) is the number of tuples in a relation.
   c) is a row of a relation.
   d) is a named column of a relation.

9) In Converting a many-to-many binary relationship into a relational database from an E-R diagram ____.
   a) can be done by placing the unique identifier of one of the tables into the other
   b) can be done by creating a single table that combines the attributes of the two entities
   c) requires the creation of an additional table between the two that represent the two entities in the relationship
   d) None of these

10) Which of the following best describe the domain of **Gender** ('M', 'F') attribute?
   a) size: 1; type: string; rang (M, F)
   b) size: 1; type: char
   c) size: 1; type: char; rang (M, F)
   d) size: 1; type: string

Question Two: (12 Marks)

Draw an **Entity-Relationship Diagram (ERD)** based on the following requirements of a Lucky Rent-A-Car's business environment:

- A car was manufactured by exactly one manufacturer. A manufacturer manufactured at least one and generally many of Lucky's cars.
- A car has had many maintenance events (but a brand new car may not have had any, yet.) A car may not have been rented to any customers (again, the case of a brand new car) or to many customers.
- A customer may have rented many cars from Lucky, and to be in Lucky's business environment must have rented at least one.
- Rental Date, Return Date, and Total Cost are intersection data to the relationship between Car and Customer.

Question Three (8 Marks)

1. Describe the properties of a relation (table).

2. Identify the three possibilities the **one-to-one relationship** can be. Give an example of one possibility.

End of Questions
Good Luck