Umm Al-Qura University
Collage of Computer Science and Information Systems.
Computer Science Dept.

Midterm Exam
Data base
Sem2 of Academic Year 1439-1440

الاسم: ---------- الرقم الجامعي: ----------

Q1 (20 marks)	Q2 (6 marks)	Q3 (4 marks)	Total (30 marks)

Question 1. General Questions:

1- Multiple choices [15 Marks]

1. _____Modeled both data and their relationships in a single structure (object)
   a. Hierarchical Database Model
   b. Network Database Model
   c. Relational Database Model
   ~~d. Semantic Database Model~~ Object-Oriented Database (OODBM)

2. The DBMS software together with the data itself. Sometimes, the applications are also included is called _____.
   a. Database system
   b. Database Model
   c. Database Management System
   d. Database Schema

3. Difficult to represent M – 1 or M – M relationships in the _____
   a. Hierarchical Database Model
   b. Network Database Model
   c. Relational Database Model
   d. Semantic Database Model

4. _____ is a way to logically group objects such as tables, views, stored procedures
   a. Database system
   b. Database Model
   c. Database Management System
   d. Database Schema

5. The candidate keys that are not selected as primary key are _____
   a. Candidate Key
   b. Alternate Key
   c. Super Key
   d. Primary Key

6. None of the _____ 's attributes can have NULL values
   a. Candidate Key
   b. Alternate Key
   c. Super Key
   d. Primary Key

7. _____ relation exists when one instance of the first entity (parent) can relate to many instances of the second entity (child), and one instance of the second entity can relate to many instances of the first entity
   a. 1 – to – 1
   b. M – to – M
   c. 1 – to – M
   d. M – to – 1

8. Address: 'House_no: City: State' is_____:
   a. Multivalued attribute b. Single Attribute
   c. Composite attribute d. Derived attribute

9. The outcome of the _____ phase is an entity-relationship diagram
   a. Requirement analysis b. Conceptual Design
   c. Logical Design d. Physical Design

10. _____ phase corresponds to designing the internal schema in the terminology of the three-level DBMS architecture
   a. Requirement analysis b. Conceptual Design
   c. Logical Design d. Physical Design

11. In the _____ SQL is not supported
   a. Network Database Model b. Hierarchical Database Model
   c. Relational Database Model d. All of these

12. In the ERD the relationship between the attributes may be _____
   a. One to One b. One to Many
   c. Many to Many d. None of these

13.. The set of allowable values for one or more attributes: ____
   a. Domain of attribute b. Degree of relation
   c. Tuple d. None of these

14.. The restrictions placed on the data in the relational database is called_____
   a. Business rules b. Constraints
   c. Relationships d. All of these

15. The number of instances of one entity type that may be associated with each instance of the other entity type: ____
   a. Cardinality of relationship b. Ternary relationship
   c. Binary relationship d. None of these

2- True of false and correct the false ones [5 Marks]

a. Entity integrity states that the value of a foreign key must either match a candidate key value of some existing tuple in the home relation or (2) be null

(F)

Referential integrity

b. Week entity type is the one whose instances can exist independently

(F)

Strong

c. There can be multiple Candidate Keys in one table. Each Candidate Key can qualify as Super Key (F)

Primary key

d. Database administrator uses the database for queries, reports, and updating the database content. (F)

end-user

e. Each row in a relational table is an Entity instance (T)

Question 2: (1) What is the difference between each TWO of the following **[4 Marks]**

a) Simple attribute vs Composite attribute

Simple Attribute : Attribute that hold a atomic/ single value.
Composite Attribute : Attribute value not atomic. It is attribute that can further subdivided

b) Single valued attribute vs Multi-valued attribute

Single Valued Attribute: is an attribute that can have only a single value.
Multi Valued Attribute: Attribute that hold multiple values.

c) Stored attribute vs Derived attribute

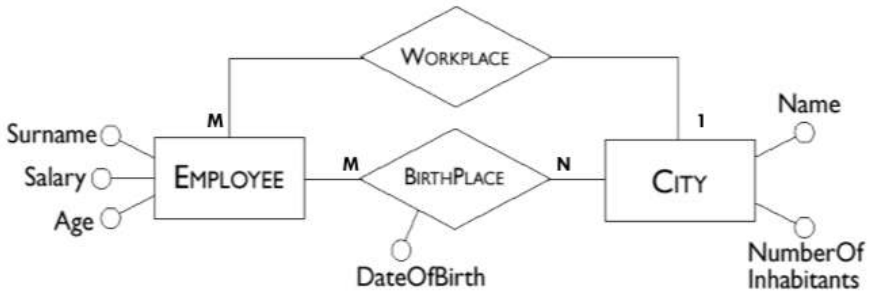
Stored Attribute: An attribute that supplies a value to the related attribute.
Derived Attribute: An attribute that's value is derived from a stored attribute.

d) Primary Key vs Foreign Key

A key which is used to uniquely identify a record in a table(relation) is called primary key
A foreign key is an attribute or set of attributes in a relation whose values match a primary key in another relation.

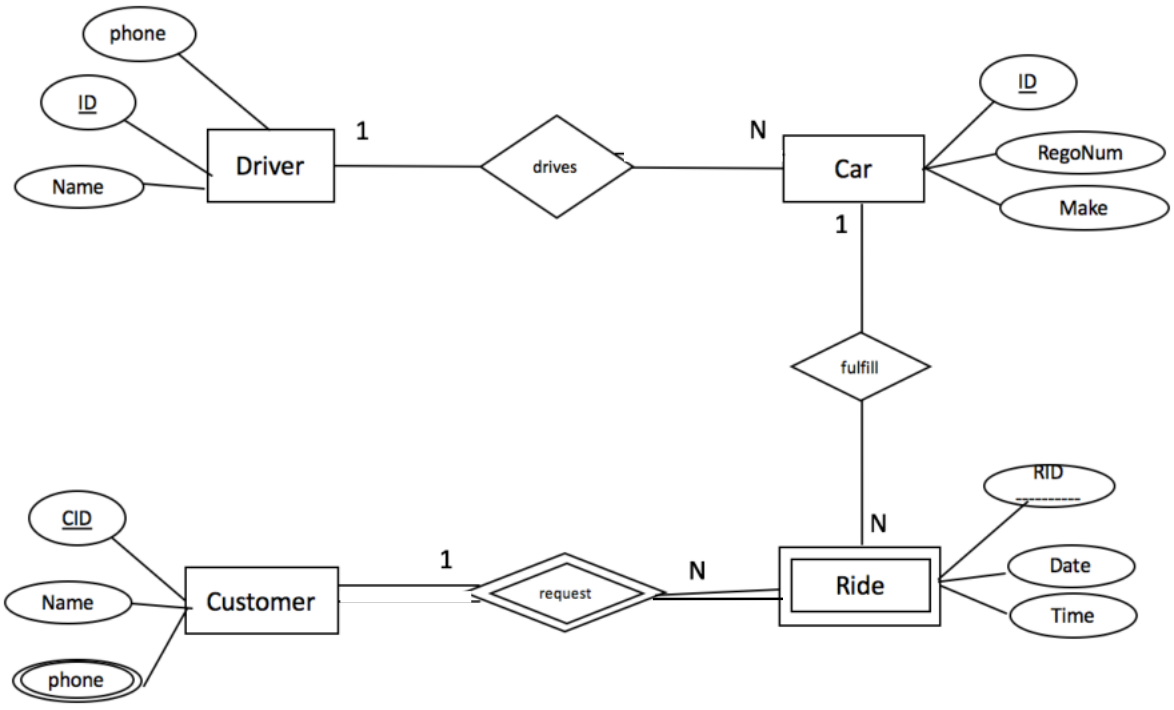
(3) Draw an ER diagram based on the following: **[2 Marks]**

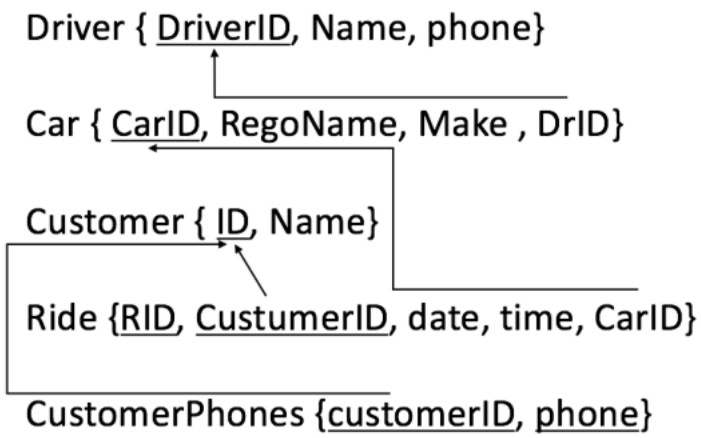
Suppose we have two entity sets: employee contains id and name and city contains code and name. Employees are working in a city. In addition, some of the employees were born in the same cities that they work on, at a certain date of birth. Draw also at least two attributes for the entities from your mind.



Question 3: Mapping to Relational Model **[4 Marks]**

(1) Convert the following ERD into Relations using the relational model approach.





Bonus : Convert the Chen's notation in (1) to the UML notation **[2 Marks]**

End exam.