KING SAUD UNIVERSITY

Community college

Computer science department

جامعة الملك سعود
King Saud University
كلية المجتمع
قسم علوم الحاسب

نموذج الاجابة
Answer Model

A : Information — **أ- معلومات**

Student Name		اسم الطالب
Student Number		الرقم الجامعي للطالب
Semester	First Semester (Final Exam)	الفصل الدراسي
Academic year	1439/1440	السنة الدراسية
Course Title	Fundamentals of Database Systems	اسم المقرر
Course Symbol, No	COMP 1211	رقم ورمز المقرر
Section number	1941 - 1989	رقم الشعبة
Instructor Name	Dr. Mohammed Amoon	اسم مدرس المقرر
Exam date	Tuesday 04/04/1440H	تاريخ الاختبار
Exam time	08:00AM	موعد الاختبار
Time allowed	Two hours	الزمن المتاح للاختبار
Total Marks	40 Marks	درجة الاختبار الكلية

B -Guidelines — **ب- إرشادات**

-The exam consists of 6 questions and the total mark is (40). **- Each question has its own mark beside it.** **-The answer must be written clearly and write the question number relevant to the answer.** **- Student must not talk or cheat during the exam or he will be subject to penalty.**	**- الامتحان يتكون من ستة أسئلة ومجموع العلامات (40).** **- العلامة مكتوبة إزاء كل سؤال.** **- يجب كتابة الإجابة بوضوح وتحديد رقم السؤال المتعلق بالإجابة.** **- يمنع منعاً باتاً الالتفات/ أو الكلام / و الغش خلال الامتحان تحت طائلة العقاب**

C- student Comments about the Questions (If any)(إذا وجد) - جـ - ملاحظات الطالب حول الأسئلة

1.	**.1**
2.	**.2**

Marks — **الدرجات**

السؤال	الأول	الثاني	الثالث	الرابع	الخامس	السادس			المجموع
الدرجة									
الدرجة العظمى	9	6	10	6	5	4			40

Learning Outcomes Mapping
Fundamentals of Database Systems
(COMP 1211)

CLO	Description	Questions					
		Q1	Q2	Q3	Q4	Q5	Q6
1.1	Defining the concepts of Database and Database systems.	√	√	√			
1.2	Illustrating the processes and activities of designing relational database systems.	√		√			
2.1	Analyzing given requirements of database systems.			√			√
2.2	Developing a design of relational database system, based on given requirements.				√	√	

Question 1 (10 marks)

***Answer the following Questions*:**

0.5X18 = 9 marks

[1] Multiple Choice:-

1) Storing same data in many places is called _____.
a) iteration b) **redundancy** c) concurrency d) enumeration

2) _____architectures are common for web applications
a) One tier b) Two tiers c) **Three tires** d) Centralized

3) _____ language is used to specify the user views and their mappings to conceptual schema.
a) **VDL** b) SDL c) DDL d) DML

4) _____ is a collection of programs that enables users to create and maintain a database.
a) RTS b) **DBMS** c) IS d) AI

5) Multimedia database is _____
a) **a Database type** b) a Database functionality c) a Database Example d) Non

6) _____ determines the requirements of end-users and develop specifications for those requirements.
a) database administrators b) application programmers c) **system analyst** d) auditors

7) _____ is a subset of database.
a) portion b) scene c) **view** d) part

8) _____ language is used to do insertion, deletion, retrieval, and modification of data.
a) **VDL** b) SDL c) DDL d) DML

9) A state that satisfies the structure and constraints of a scheme is called _____ state.
a) invalid b) true c) real d) **valid**

10) The database state is called _____ of the schema.
a) intension b) **extension** c) expansion d) definition

11) _____ is the basic object of ER model which is a thing in real world.
a) relation b) domain c) attribute d) **entity**

12) _____ attributes can have more than one value.
a) composite b) simple c) **multi-valued** d) single valued

13) The entity is represented in ER-diagrams by _____.
a) oval b) **rectangle** c) double oval d) diamond

14) _____ attribute values are used to identify each entity uniquely.
a) complex b) unique c) characters d) **key**

15) The relationships are displayed as _____ in ER-diagrams.
a) rectangles b) ovals c) triangles d) **diamonds**

Question 1 (10 marks)

16) The partial key attribute is underlined with a _____ line.
a) single b) shaded c) **dotted** d) double

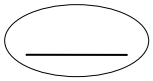
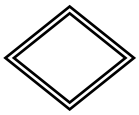
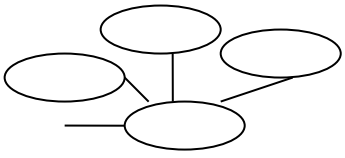
17) In ER diagrams, the total participation is displayed as a _____.
a) oval b) single line c) **double line** d) arrow

18) A weak entity type always has a _____ participation constraint with respect to its identifying relationships.
a) partial b) **total** c) overlap d) disjoint

Question 2 (6 marks)

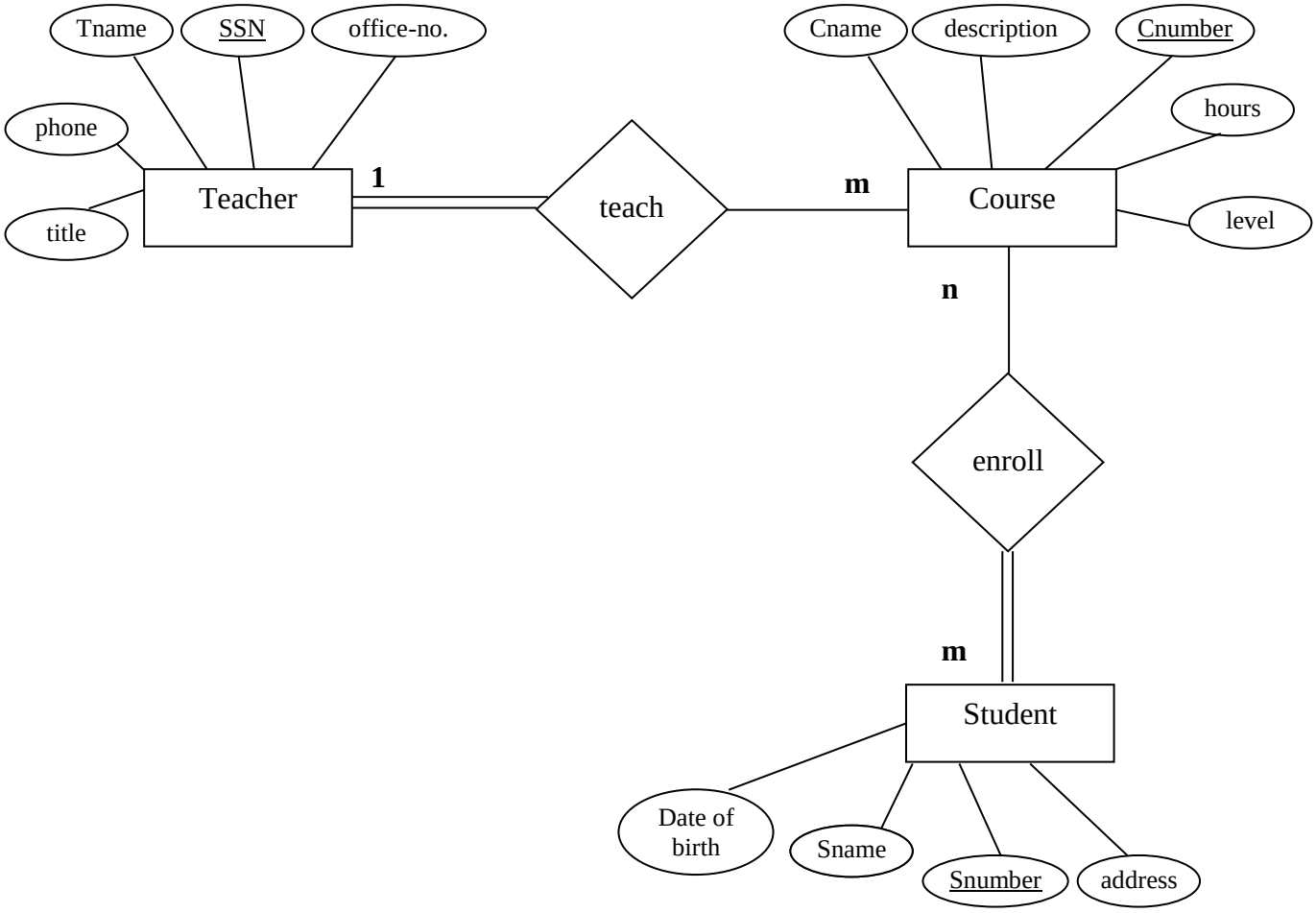
1X6 = 6 marks

[2] <u>Match the following notations for ER diagrams</u>:

Symbol	Meaning	
1. 	**Multi-valued Attribute**	
2. 	**Weak Entity**	
3. 	**Identifying Relationship**	
4. 	**Derived attribute**	
5. 	**Primary key**	
6. 	**Composite Attribute**	

Question 3 (10 marks)

[3] Answer the following questions based on the following ER diagram



a) In the above ER diagram for College database, identify the following:

1. Names of strong entity types: **Teacher, Course, Student**
2. Names of relationships: **Teach, Enroll**

b) Answer the following questions based on the above ER diagram:

1. All the Teachers must teach Courses. (**T** / F)
2. All the Students must enroll Courses. (**T** / F)
3. All Courses must be enrolled by Students. (T / **F**)
4. All Courses must by taught by Teachers. (T / **F**)
5. Each Course is taught by only one Teacher. (**T** / F)
6. Each Course is enrolled by only one Student. (T / **F**)
7. Each Teacher can teach many Courses. (**T** / F)
8. Each Student can enroll many Courses. (**T** / F)

Question 4 (6 marks)

6 marks

[4] Design the database using ER-Diagram, taking into consideration all required constraints (including: Cardinality ratio, multiplicity and Participation) on all relationships.

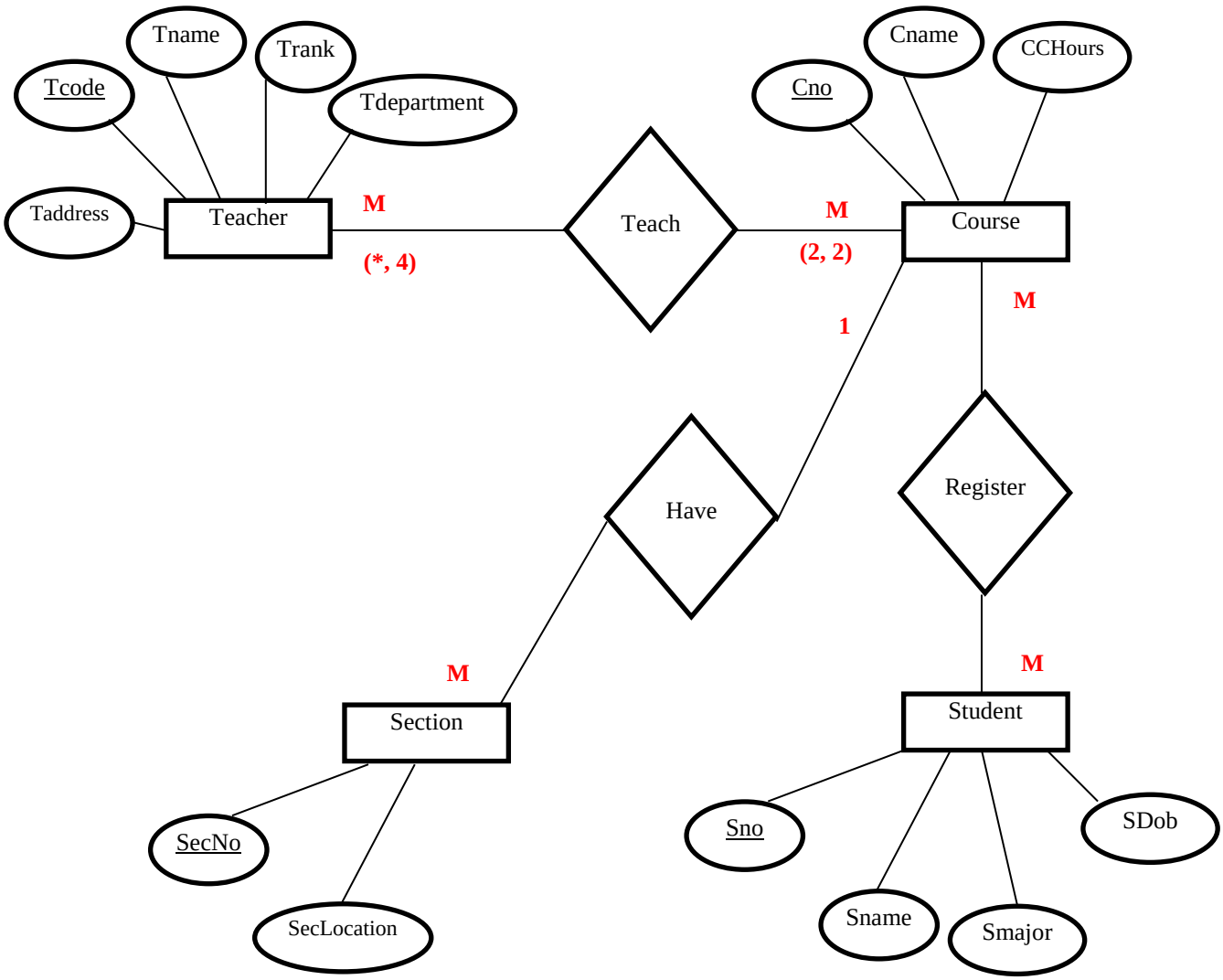
Let a University database contains the following:

A teacher has Teacher code (unique), Teacher's name, Teacher's address, rank, department. The teacher teaches courses. Each course has course name, course number(unique), course credits hours. Students register courses. Each student has student number(unique), name, major, date of birth. Courses have sections. Each section has a number(unique) and location.

The following information is given on dependencies.

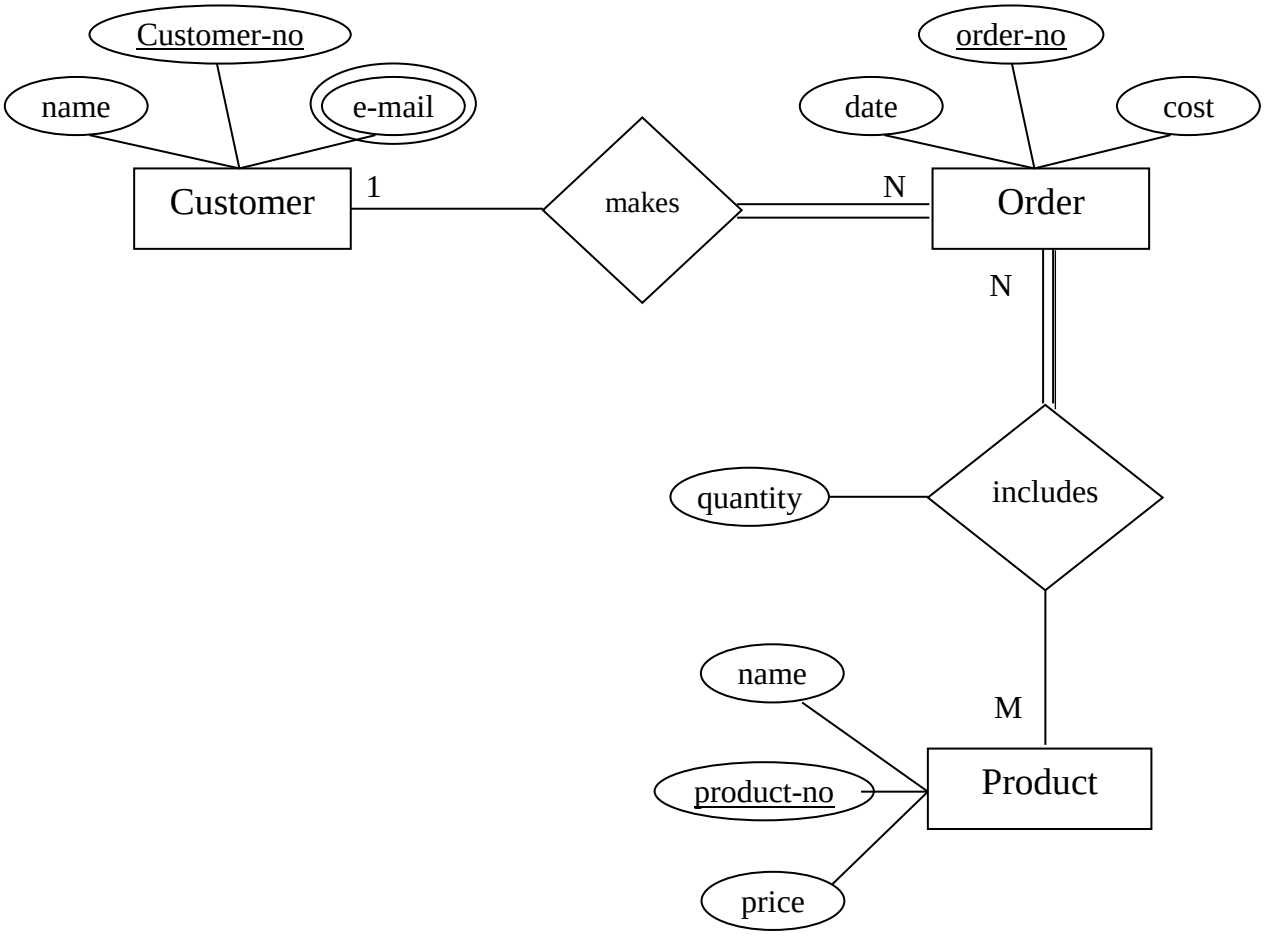
- A teacher should teach at most 4 courses, and each course could be taught by two teachers.
- A student may register many courses and each course can be registered by many students.
- The same course may have more than one section.

solution



Question 5 (5 marks)

[5] Map the following ER-model into a relational model **5 marks**



solution

Customer(Cunstomer-no, name)

CustMail(Cunstomer-no,e-mail)

FK: Cunstomer-no **references** Customer(Cunstomer-no)

Order(order-no, date, cost, Cunstomer-no)

FK: Cunstomer-no **references** Customer(Cunstomer-no)

Product(product-no, name, price)

Includes(order-no, product-no, quantity)

FK: order-no **references** Order(order-no)

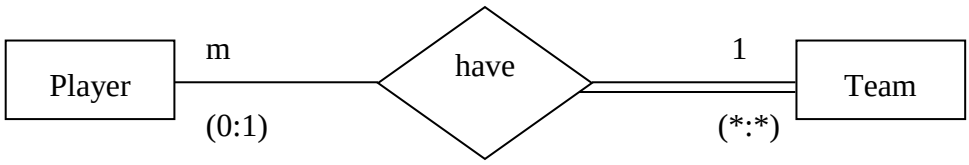
FK: product-no **references** Product(product-no)

Question 6 (4 marks)

[6] Complete the following relationships with <u>Cardinality ratio</u>, <u>Multiplicity</u> and <u>Participation</u> constraints.

4 marks

A. Each Player may play in 0 to 1 team, and each Team should have many Players. All teams must have players and a player may have not team.



B. Each Student may lead 0 to 1 Group, and each Group should be led by only one Student. Not all students can lead groups. All groups must be led.