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MAIN EXAMINATION

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MAY – AUGUST 2021

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DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

REGULAR PROGRAMME

DIT 003: INTRODUCTION TO DATABASE SYSTEMS

Date: AUGUST 2021

Duration: 2 Hours

INSTRUCTIONS: 1. SECTION A [Answer 1- Compulsory]

2. SECTION B [Answer 2 Questions]

SECTION A

Question 1

(a) Define the following terms

- (i) Data
- (ii) Database
- (iii) Database Management System (DBMS)
- (iv) Relation
- (v) Primary Key
- (vi) Foreign Key

[6 Marks]

(b) Outline the advantages of Database Management Systems.

[5 Marks]

(c) A typical DBMS has users with different rights and permissions who use it for different purposes. Describe three (3) categories of user of a DBMS.

[6 Marks]

(d) Describe five (5) characteristics of a DBMS.

[5 Marks]

(e) Describe four (4) properties of relational database systems.

[8 Marks]

SECTION B

Question 2

(a) By use of an example of each, explain the following types of relationships.

- (i) One to one (1:1)
- (ii) One to many (1:M)
- (iii) Many to Many (M:M)

[6 Marks]

(b) Describe how you deal with the Many to Many relations when doing your design.

[2 Marks]

(c) By use of the appropriate diagram, explain the use of the following in an Entity Relationship (ER) diagram.

- (i) Rectangles
- (ii) Ellipses
- (iii) Diamonds
- (iv) Lines
- (v) Primary key
- (vi) Double Ellipses

[12 Marks]

Question 3

Given the table below, write SQL statement tot:

EMP_ID	EMP_NAME	CITY	PHONE_NO	SALARY
1	Kristen	Chicago	9737287378	150,000
2	Russell	Austin	9262738271	200,000
3	Angelina	Denver	9232673822	600,000
4	Robert	Washington	9367238263	350,000
5	Christian	Los angels	7253847382	260,000

(a) Return ALL the records in the table.

[3 Marks]

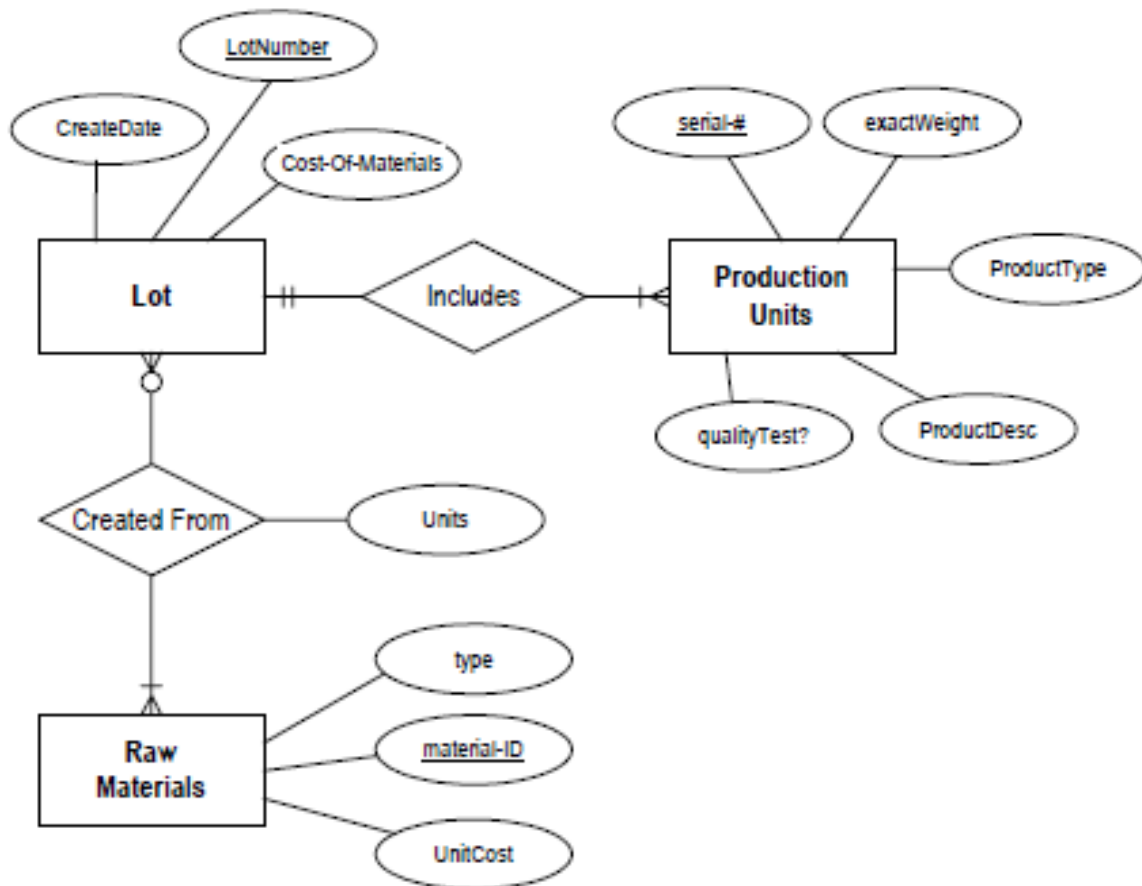
(b) Return the Emp_ID, EMP_NAME and PHONE_NO only.

[3 Marks]

- (c) Delete employee with EMP_ID equal to 3. [3 Marks]
- (d) Return employees earning more than 200,000. [3 Marks]
- (e) Add a new employee of your choice to the table. [4 Marks]
- (f) Change the salary of Christian to 300,000 [4 Marks]

Question 4

Production tracking is important in many manufacturing environments (e.g., the pharmaceuticals industry, children’s toys, etc.). The following ER diagram captures important information in the tracking of production. Specifically, the ER diagram captures relationships between production lots (or batches), individual production units, and raw materials.



Convert the ER diagram into a relational database schema. Be certain to indicate primary keys and referential integrity constraints.

[20 Marks]

Question 5

(a) Explain five (5) advantages of Structured Query Language (SQL).

[5 Marks]

(b) Discuss the five (5) types of SQL commands.

[15 Marks]

DET: MAY 2021