**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**P.O. Box 972-60200 – Meru-Kenya.**

**Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411**

**Fax: 064-30321**

**Website:** [**www.must.ac.ke**](http://www.must.ac.ke) **Email:** **info@must.ac.ke**

**University Examinations 2015/2016**

STAGE 1 FIRST SEMESTER EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY

**CIT 2103: DATABASE SYSTEMS**

 **DATE: AUGUST 2016 TIME: 11/2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define the following terms as used in relational database:
2. Tuple
3. Entity
4. Relationship (3 Marks)
5. Differentiate the following terms as used in database systems:
6. Database and database management system.
7. Many to many relationship and one to many relationship
8. Primary key and foreign key (6 Marks)
9. List at least three different types of information that a university would maintain in a database. (3 Marks)
10. Describe three advantages of using database systems. (6 Marks)
11. Using relevant examples differentiate between key attribute and composite attribute. (4 Marks)
12. Describe two database models. (4 Marks)
13. Describe two areas where database are applied. (4 Marks)

**QUESTION TWO (20 MARKS)**

1. Consider the following:

Employee (employee\_id,employee\_name,city,department,date\_of\_birth)

Customer (customer\_id,customer\_name,city)

Company (company\_name,company\_code,city)

Write Mysql statements you will use to;

1. Create the employee, customer and company table. (6 Marks)
2. Insert a record in the employee table. (2 Marks)
3. Display all records in the employee table. (2 Marks)
4. Describe the three normal forms. (4 Marks)
5. Explain three properties of relations in database systems (6 Marks)

**QUESTION THREE (20 MARKS)**

1. Using examples explain the following database integrity constraints;
2. Entity
3. Validity
4. Referential (6 Marks)
5. Describe the functions of the following tools found in a database management system(DBMS)
6. Data Definition Language (2 Marks)
7. Data Manipulation Language (2 Marks)
8. Data dictionary (1 Mark)
9. Outline the symbols used in entity relationship diagram. (5 Marks)
10. Describe two roles played by a database administrator. (4 Marks)

**QUESTION FOUR (20 MARKS)**

1. State the type of relationship and draw a Entity Relationship diagram to represent the following:
2. An employee manages one store and each store is managed by one employee. (2 Marks)
3. A painter paints many different paintings, but each painting is painted by only one painter. (2 Marks)
4. An employee may learn many job skills and each job skill may be learnt by many employees. (2 Marks)
5. Given the products table below;

|  |  |  |  |
| --- | --- | --- | --- |
| Product\_id | Product\_name | Quantity  | Price |
| 001 | Book  | 50 | 75 |
| 002 | Pen | 100 | 20 |
| 003 | Rubber | 200 | 20 |

Write MySQL statements do the following:

1. Create the product table and insert the records. (5 Marks)
2. Retrieve product\_id, product\_name and quantity from the product table. (3 Marks)
3. Update product table so that the book quantity is 40. (3 Marks)
4. Add another column called order\_id to the product table. (3 Marks)