**061006T4ICT**

**ICT TECHNICIAN LEVEL 6**

**IT/OS/ICT/CR/7/6**

**MANAGE DATABASE SYSTEMS**

**Mar. /Apr. 2023**

**Time: 3 Hours**

**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**WRITTEN ASSESSMENT**

**3 Hours**

**INSTRUCTIONS TO CANDIDATE:**

*Maximum marks for each question are indicated in ().*

*This paper consists of* ***TWO*** *sections:* ***A*** *and* ***B****.*

*Answer* ***ALL*** *questions in section* ***A*** *and* ***THREE*** *questions from section* ***B*** *in the answer booklet provided.*

***Candidate should answer questions in English.***

**SECTION A (40 Marks)**

***Answer ALL questions in this section*.**

1. **Define each of the following terms:**
2. **Entity; (2 Marks)**
3. **Entity type; (2 Marks)**
4. **Entity set. (2 Marks)**
5. State the **three** levels of data abstraction in Database Management Systems. (3 Marks)
6. Describe **three** keys that can be used in database. (6 Marks)
7. Explain **two** types of Data Independence in databases.(4 Marks)
8. Explain the term data testing as used in a database. (2 Marks)
9. Explain **two** reasons for performing database testing. (3 Marks)
10. Mary developed a database for a company. Outline the **four** key stages she could have followed when testing this database. (4 Marks)
11. Mike designed a database using an Entity Relationship Diagram (ERD). Using symbols, describe **three** connotations of ERD he could use. (6 Marks)
12. There are four most basic operations in database which are the backbone for interacting with database. State **two** of these database operations. (2 Marks)
13. With the aid of an example in each case, describe **three** components of a database system. (4 Marks)

**SECTION B (60 MARKS)**

*Answer any* ***THREE*** *questions from this section****.***

1. a) Define the term database. (2 Marks)
2. Differentiate between *field* and *record* as used in databases. (2 Marks)
3. Explain the following as used in relational database model: (10 Marks)
4. Table;
5. Tuple;
6. Attributes;
7. Relation schema;
8. Domain.
9. Explain the **three** types of relationships in databases. (6 Marks)
10. a) Explain **six** characteristics of Database Management System. (12 Marks)

b) A company has installed a database system for its operations. Explain **four** benefits accrued from its use. (8 Marks)

1. a) Data Definition Language is used to bring objects into existence. Discuss **five** database objects. (10 Marks)

b) Discuss **five** types of database security. (10 Marks)

1. a) Highlight **four** factors considered when choosing the type of database software to adopt. (4 Marks)

b) The ACID properties of data transactions provide a mechanism to ensure the correctness and consistency of data in a database. Explain each of these **four** properties. (8 Marks)

c) Databases are designed based on various data models. Discuss **four** database models. (8 Marks)

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