

061006T4ICT

ICT TECHNICIAN LEVEL 6

IT/OS/ICT/CR/7/6

MANAGE DATABASE SYSTEMS

NOV/DEC 2023



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

WRITTEN ASSESSMENT

TIME: 3 Hours

CANDIDATE INSTRUCTIONS

1. This paper has TWO sections A and B. Attempt questions in each section as per instructions given in the section.
2. You are provided with a separate answer booklet.
3. Marks for each question are indicated in the brackets.
4. Do not write on the question paper

This paper consists of 4 printed pages

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing

SECTION A: 40 MARKS

Answer ALL questions in this section.

1. Databases consist of several key components that work together to organize, manage, and access data efficiently. State FOUR such components. (4 Marks)
2. SQL commands are often categorized based on the type of operation they perform within a database. Outline the FOUR types of these commands. (4 Marks)
3. A good database system is crucial for efficiently managing and storing data, ensuring data integrity and providing reliable and secure access to information. Outline FOUR characteristics one would consider to achieve this. (4 Marks)
4. In the context of a database, differentiate between *database schema* and *database instance*. (4 Marks)
5. In SQL, the ALL operator is used in conjunction with certain comparison operators to compare a value with all values in a set. State THREE statements that are usually associated with SQL ALL operator. (3 Marks)
6. Define the term *variable* in databases. (2 Marks)
7. The database testing process typically involves several key steps to ensure the accuracy, reliability and performance of the database system. Outline the THREE step database test process. (3 Marks)
8. Transaction mechanisms and concurrency mechanisms are essential aspects of database management systems (DBMS) that ensure data consistency and enable efficient multi-user access to the database. Differentiate between *transaction mechanisms* and *concurrency mechanisms*. (4 Marks)
9. **Derived** and **stored** are examples of data attributes used in a database, Outline TWO differences between the two. (4 Marks)
10. Define the term database dictionary. (2 Marks)
11. Normalization is a process in database design that organizes tables and attributes in a database to minimize redundancy and dependency. Outline FOUR advantages of normalization. (4 Marks)
12. In database design, relationships are used between different tables to represent how the data in one table is related to the data in another. State TWO types of database relationships. (2 Marks)