

061005T4ICT

ICT TECHNICIAN LEVEL 5

IT/OS/ICT/CR/4/5

MANAGE DATABASE SYSTEMS

July/August 2024



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This paper consists of two sections; **A** and **B**
2. Answer **ALL** the question as guided in each section
3. Marks for each question are as indicated in the brackets
4. You are provided with a separate answer booklet to answer the questions
5. Do not write in this question paper

This paper consists of THREE (3) 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 the questions in this section.

1. Esther a database administrator was asked to come up with a new database for the new department created. State the category and give an example of each of the following database operations she used in database.
 - i. CREATE (2 Marks)
 - ii. INSERT INTO (2 Marks)
 - iii. SELECT (2 Marks)
2. When designing a database primary and foreign keys are crucial. Differentiate between a primary key and a foreign key as used in database design. (4 Marks)
3. An ICT Technician is required to carry out database testing, Give the procedure of testing a database in Microsoft Access. (4 Marks)
4. A student normalized a table he created during a database lesson. Explain TWO objectives of normalization during table design. (4 Marks)
5. James a database manager at DESCO Company realized the database had a lot of Null values. Explain the meaning of a null value in a database system. (2 Marks)
6. A database model determines the logical structure of a database and the manner in which data can be stored, organized and manipulated. Differentiate between the following as used in databases:
 - i. Relational and hierarchical models of database design. (2 Marks)
 - ii. Required attribute and an optional attribute during database design. (2 Marks)
7. Mary created a form for her database. Outline FOUR uses of this form. (4 marks)
8. When creating a table in Microsoft Access, data types are used, Outline FOUR data types that can be used in tables (4 Marks)
9. Explain when the following views are used while designing a table in Microsoft Access.
 - i. Datasheet view (2 Marks)
 - ii. Design View (2 Marks)
10. A database administrator generated a report from a table. State **FOUR** uses of reports in databases. (4 Marks)

SECTION B: (60 MARKS)

Answer any THREE questions in this section.

11. a. Most industries and companies have opted to manage their data using a well-structured database. Explain **FOUR** areas of database application in the modern world. (8 Marks)
- b. Define the role of each of the following personnel in database systems. (8 Marks)
- i. Specialized end user
 - ii. Database Administrator
 - iii. System Analyst
 - iv. Software Developer
- c. Peter, a database Administrator at an institution has reported several cases of data loss and manipulation in the system. State **FOUR** causes of data loss in database systems. (4 Marks)
12. a. In a college, a student Enrolls on courses, a students must be assigned to at least one or more courses. Each course is taught by a single Trainer. To maintain instruction quality, a trainer can deliver only one course. Draw an E-R Diagram showing the attributes and their relationships. (10 Marks)
- b. A database user extracted data from database then validated the same data. Explain FIVE advantages of validating database data. (10 Marks)
13. During database design relationships are created between tables.
- a. Using a diagram, explain the following relationships in data modeling. (12 Marks)
- i. One to One
 - ii. One to Many
 - iii. Many to One
 - iv. Many to Many
- b. Outline steps on how to create a One to One relationship in Microsoft Access. (4 Marks)
- c. Differentiate between DELETE and UPDATE as used in database systems (4 Marks)
14. a. Indexing is a data structure technique that is commonly used in database tables. Describe FIVE reasons why one should not index each and every column of a table. (10 Marks)
- b. Database management systems (DBMS) perform several functions in order to ensure data integrity and consistency in an organization. Explain FIVE functions of a DBMS. (10 Marks)

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