

061006T4ICT
ICT TECHNICIAN LEVEL 6
IT/OS/ICT/CR/7/6
MANAGE DATABASE SYSTEMS
July/August 2024



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO THE CANDIDATE

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 FOUR printed pages.

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

SECTION A: (40 Marks)

Answer ALL questions in this section.

1. Database attributes are used in databases when designing tables. Define the term databases. (2 Marks)
2. John designed a database management system for a company which was used to store the data which has got several integrity issues. State FOUR components of the system he could have used during the design. (4 Marks)
3. When working with the database, the user performs several operations necessary for the database to remain stable. Explain each of the following database operations. (4 Marks)
 - a. Update
 - b. Select.
4. During data entry in the system, the user is supposed to validate the results of the processed data. Outline FOUR advantages of validating these results in a database. (4 Marks)
5. A company conducted training during database implementation where users of system were trained. Explain THREE types of training it could have conducted. (6 Marks)
6. A system analyst intends to carry out an implementation of a new system. Outline FOUR benefits of carrying out the implementation plan. (4 Marks)
7. The backing up of data in the database is a very important aspect in an organization. Identify FOUR circumstances which necessitates data backup (4 Marks)
8. When designing a database it is important to define the field types for each entry in order to maintain data consistency. Distinguish between text and memo field types as used in table design. (4 Marks)
9. A network database designer designed a network database for use in the organization to help in sharing information. Outline FOUR challenges he encountered during the implementation of the design. (4 Marks)
10. The foundation of database transaction is the property which helps in ensuring that data is maintained in a good order. Outline FOUR properties of a transaction in DBMS. (4 Marks)

SECTION B: (60 Marks)

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

11. a. Table 1 below shows information of Employees in Usalama Company. Use it to answer the questions that follow.

Empid	Empname	Dapartment	EmailId
101	Peter	Human resource	peter@gmail.com
102	Mary	ICT	mary@yahoo.com
102	Hellen	Finance	hellen@hotmail.com
104	Harry	Finance	harry@gmail.com
105	Loice	Procurement	loice@yahoo.com

Table 1: Employees

- i) Write a query to select the detail of the employee whose name start with P. (3 Marks)
 - ii) Write a query to select the detail of employee whose emailId is in gmail.com. (3 Marks)
 - iii) Write a query to select the details of employee whose department is finance or procurement. (4 Marks)
- b. Table 2 (empproject) below shows employee project data. Use it to answer the question that follows

Empid	ProjectId	ClientID	StartYear	EndYear
101	P1	CL1	2023	2024
102	P2	CL3	2022	2024
103	P3	CL3	2024	2026

Table 2: empproject

- Write a schema for this table. (5 Marks)
- c. As a Database System administrators, there are several methods you can use to maintain data integrity and consistency including using a rollback recovery technique.
- i. Define the technique mentioned in 11(c) above. (2 Marks)
 - ii. State THREE advantages of this technique. (3 Marks)

12. a. Whenever new patients are seen for the first time, they complete a patient information form that asks their name, address, phone number, and insurance agent, all of which is stored in the patient information file. Patients can be signed up with only one agent. Each time a patient visits its doctor, an insurance claim is sent to the agent for payment. The claim must contain information about the visit, such as the date, purpose, and cost. It would be possible for a patient to submit two claims on the same day. Draw an ERD for the situation. (10 Marks)
- b. Highlight FOUR advantages of an ER diagram. (4 Marks)
- c. Database integration is a vital process for modern organizations aiming to leverage their data effectively. However, it has some challenges. Explain THREE such challenges. (6 Marks)
13. a. A database which is well designed is important for efficient data management and offers several significant advantages. Discuss FOUR such advantages. (12 Marks)
- b. A relational database organizes data into rows and columns. Explain THREE characteristics of relational databases (4 Marks)
- c. Testing of the database is done to ensure that anomalies in system are cleared according to the requirements. Explain TWO reasons for carrying out database testing. (4 Marks)
14. . a. A relationship is an association between two or more tables that defines how the data in those tables is related to each other. Describe FOUR such types of relationship. (8Marks)
- b. Differentiate between composite and derived attribute in an entity relationship. (4 Marks)
- c. Describe FOUR characteristics of the third normal form in normalization. (8 Marks)

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