



**PAMIBIA UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

**FACULTY OF COMPUTING AND INFORMATICS**  
DEPARTMENT OF SOFTWARE ENGINEERING

<b>QUALIFICATION:</b> BACHELOR OF COMPUTER SCIENCE, BACHELOR OF INFORMATICS, BACHELOR OF CYBER SECURITY, BACHELOR OF GEOINFORMATICS, BACHELOR OF LAND ADMINISTRATION	
<b>QUALIFICATION CODE:</b> 07BCMS, 07BAIT, 07BCCS, 07BGEI, 07BLAM	<b>LEVEL:</b> 5
<b>COURSE CODE:</b> DBF510S	<b>COURSE NAME:</b> DATABASE FUNDAMENTALS
<b>SESSION:</b> JULY 2025	<b>PAPER:</b> THEORY
<b>DURATION:</b> 2 HOURS	<b>MARKS:</b> 70

<b>SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER:</b>	MRS SHILUMBE CHIVUNO-KURIA
<b>MODERATOR:</b>	DR GEREON KOCH KAPUIRE

<p style="text-align: center;"><b>INSTRUCTIONS</b></p> <ol style="list-style-type: none"><li>1. Attempt all Questions.</li><li>2. All questions have to be answered in the <u>Answer Booklet</u>. <u>Clearly indicate the section and question number for each answer.</u></li><li>3. The allocation of marks is an indication of the extent of the expected answer. Answering more than expected does not result in higher marks. Keywords alone are not enough.</li><li>4. There are no books, notes or any other additional aids allowed in the examination.</li></ol>
---

**PERMISSIBLE MATERIALS**

1. Examination paper
2. Examination script

**THIS QUESTION PAPER CONSISTS OF 5 PAGES (Including this front page)**

Answer ALL the questions in this paper.

**SECTION A:**

[Marks: 20]

**Question 1:**

**Multiple Choice Questions**

[10 Marks]

- Answer all the questions in the answer booklet that has been provided.
- Select the best answer.

1. Which key uniquely identifies each record in a table?
  - a) Candidate Key
  - b) Super Key
  - c) Primary Key
  - d) Alternate Key
2. What does DCL stand for?
  - a) Data Constraint Language
  - b) Data Control Language
  - c) Database Column Language
  - d) Data Cursor Language
3. The number of entity types that participate in a relationship is called the:
  - a) number
  - b) identifying characteristic
  - c) degree
  - d) counter
4. What does an RDBMS consist of?
  - a) Collection of Records
  - b) Collection of Keys
  - c) Collection of Tables
  - d) Collection of Fields
5. What does a foreign key combined with a primary key create?
  - a) Network model between the tables that connect them
  - b) Parent-Child relationship between the tables that connects them
  - c) One to many relationships between the tables that connect them
  - d) All of the mentioned
6. What is the function of the following command?  
Delete from T  
where Q ... ;
  - a) Clears entries from a relation
  - b) Deletes relation
  - c) Deletes particular tuple from relation
  - d) All of the mentioned

7. Which symbol is used for a single-character wildcard in LIKE?
- \_
  - %
  - \*
  - #
8. What does ERD stand for?
- Entity-Relationship Design
  - Entity-Relational Diagram
  - Entity-Relationship Diagram
  - Entry Record Design
9. What is the command to change a table structure in SQL?
- UPDATE
  - MODIFY
  - ALTER
  - RENAME
10. Which of the following anomalies is caused by the insertion of redundant data?
- Update anomaly
  - Insertion anomaly
  - Deletion anomaly
  - All of the above

**Question 2**

**[10 marks]**

Indicate whether the following statements are **True** or **False** in your answer booklet.

ID	Statement/Description	True	False
1	The keyword SET is used to assign values in an UPDATE statement.		
2	TRUNCATE is slower than DELETE.		
3	You can roll back a Data Definition Language statement.		
4	A composite key consists of multiple attributes.		
5	The ALTER command can be used to add columns.		
6	An index on a column improves INSERT speed.		
7	CHAR and VARCHAR are interchangeable.		
8	2NF removes transitive dependency.		
9	COUNT(*) includes NULL values in its result.		
10	A full outer join returns only matching rows.		

**SECTION B: CONCEPTS****[Marks: 10]**

1. Differentiate between DELETE, TRUNCATE, and DROP commands in SQL. [3 Marks]
2. Explain the difference between a schema and an instance in DBMS? [2 Marks]
3. You are given the following two tables Product (ProductID, ProductName, Quantity) and Customer (CustomerID, CustomerName, ProductID), with ProductID as a primary key in the Product table and a foreign key in the Customer table. Write a SQL statement that will retrieve matched and unmatched rows from the two tables with the following resultant columns CustomerID, CustomerName, and ProductName. [4 Marks]
4. Write an SQL Command that will delete all the rows from the Customer table in Q.3 above using a DDL Command. [1 Mark]

**SECTION C: COMPREHENSION****[Marks: 40]**

1. Given the following scenario, create an appropriate ER diagram. Include at least 3 attributes and 1 primary Key for each entity. Include the cardinality and relationships. Use Crow's Foot Notation. Resolve any many to many relationships if necessary. [15 Marks]

A new private school wants to develop a database system to manage courses, students, and their registration information. Each student can register for multiple courses and each course can have multiple students. Each course is taught by one lecturer, but a lecturer can teach multiple courses.

2. Given the following table. Normalise the table to 3NF by explaining the different stages of normalisation. Put some sample data in your tables.
  - a. What normal form is the table in? Briefly explain why you say it is in that state. [2 Marks]
  - b. Normalise the table to third Normal form by briefly explaining what happens at every stage and specify the normal form of each table with sample data. [13 Marks]

PatientTreatment				
PatientID	PatientName	Treatment	Doctor	DoctorPhone

101	Maria	Cough, Earache	Dr Shikongo	081-2345678
102	Thomas	Earache	Dr Van Wyk	081-9876543

3. Write a SQL statement to create a database called PatientCare. [1 Mark]

4. Write a query that creates the table Patient as shown below in the PatientCare Database. [6 Marks]

<u>PatientID</u>	PatientName	Treatment	Doctor
1001	Tina Mundia	Cough	Dr Solomon
1002	Paul Thomas	Earache	Dr David

5. Write an SQL statement to insert the rows in the table. [3 Marks]

\*\*\*\*\* End of the Paper \*\*\*\*\*