



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

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

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE, BACHELOR OF INFORMATICS, BACHELOR OF CYBER SECURITY, BACHELOR OF GEOINFORMATICS, BACHELOR OF LAND ADMINISTRATION	
QUALIFICATION CODE: 07BCMS, 07BAIT, 07BCCS, 07BGEI, 07BLAM, 06DPRS	LEVEL: 5
COURSE: DATABASE FUNDAMENTALS	COURSE CODE: DBF510S
DATE: JULY 2023	PAPER: THEORY
DURATION: 2 HOURS	MARKS: 70

SUPPLEMENTARY/ SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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THIS QUESTION PAPER CONSISTS OF 5 PAGES
(Including this front page)

INSTRUCTIONS TO STUDENTS

1. Attempt all Questions.
2. All questions have to be answered in the Answer Booklet. Clearly indicate the section and question number for each answer.
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.
4. There are no books, notes or any other additional aids allowed in the examination.

SECTION A:
Question 1:

[Marks: 20]

Multiple Choice Questions

[10 Marks]

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

1. Tables in second normal form (2NF):
 - a) eliminate all hidden dependencies.
 - b) eliminate the possibility of an insertion anomaly.
 - c) have a composite key.
 - d) have all non-key fields depend on the whole primary key.
2. You would use this SQL command to remove a table and all its contents from the database schema?
 - a) DROP TABLE
 - b) GROUP BY
 - c) INDEX BY
 - d) SEQUENCE BY
3. What is a Schema?
 - a) A very high level, conceptual overview of the database.
 - b) Collection of tables in the database.
 - c) The collection of saved queries.
 - d) The systems and processes contained in the DBMS supporting the administration of the data.
4. An UPDATE query:
 - a) is used to add new records to a table.
 - b) is used to change existing values within a table.
 - c) is used to change the structure of the database.
 - d) is used to determine what has changed in the database since the last benchmark process.
5. Which of these describes a major advantage in using databases for storing data?
 - a) The data have a better chance of being available for the user in an accurate, integral form.
 - b) All of the data is stored in one place and therefore more vulnerable to loss or destruction.
 - c) Organisational procedures may make it difficult for users to access data.
 - d) Data retrieval cannot be enhanced for a single application.
6. A _____ consists of linked tables that form one overall data structure.

- a) database system
 - b) data structure
 - c) file processing system
 - d) file-oriented system
7. Which of these is an example of an entity?
- a) Patient.
 - b) a patient's name.
 - c) an employee's ID.
 - d) all of the above.
8. What is the impact of not including a JOIN command when using multiple tables in a query?
- a) All records in each table are associated with all records in the other tables.
 - b) The foreign keys in each table are linked to the primary keys in the other tables.
 - c) The primary keys in each table are joined together.
 - d) The query will not work – an error is generated.
9. In a crow's foot cardinality notation, a double bar indicates:
- a) two
 - b) many
 - c) zero
 - d) one and only one
10. If you multiply one by 100, then you add 100, and then multiply the result by null. The result will be:
- a) an error.
 - b) 100.
 - c) 200.
 - d) Null.

Question 2

[10 marks]

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

ID	Statement/Description	True	False
1	A primary key prevents nulls from being used in the column.		
2	A SELECT clause shows the output you want to retrieve.		
3	UNIQUE is used to eliminate duplicates from the results.		
4	A multivalued attribute can have more than one value associated with the key of the entity.		
5	A weak entity is not dependent on the existence of another entity for its primary key.		
6	Denormalization is the process of decomposing relations with anomalies to produce smaller, well-structured relations.		

7	Data redundancy leads to a waste of storage space because one has duplicate data.		
8	The MODIFY clause changes values in a table.		
9	Values that are specified by the BETWEEN operator are inclusive.		
10	You can change a column's datatype, size, and default value by using the ALTER statement.		

SECTION B: CONCEPTS

[Marks: 10]

- Using an example explain what a composite key is. [2 Marks]
- Explain the one use of the DESC keyword and give an example. [2 Marks]
- Name and describe the types of anomalies and give a practical example of each. [6 Marks]

SECTION C: COMPREHENSION

[Marks: 40]

- 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. [17 Marks]

A hospital has a set of patients and a set of medical doctors. Information gathered from the patient includes their id#, name, date seen by the doctor. The doctor has a doctor#, name and specialisation. A doctor can perform one or more tests on a single patient. A test consists of the testname, testdate, result. A doctor can perform one or more tests on many patients in a given day.

- Write an SQL statement to create a new table named CHOMMIE with attributes for ID, First_name, last_name, birthday, and Cellphone#. Decide on your own about reasonable column names and data types and include a primary Key. [7 Marks]
- Write a query to Insert five records containing information about people you know, at least one person should have a last_name of 'Zulu'. [5 Marks]
- Write a query to display all the records, ordered by last_name in descending order. [3 Marks]
- Your friend with the last_name 'Zulu' has changed their cellphone number to 0812345678. Write a query to make this modification in the Chommie table. [3 Marks]

6. Write a query to verify that the changes have been made in the Chommie table.
[2 Marks]

7. Zulu no longer wants to be your friend. Write a query to delete Zulu from the table.
[3 Marks]

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