namibia university
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS
SCHOOL OF COMPUTING

DEPARTMENT OF SOFTWARE ENGINEERING

QUALIFICATIONS: BACHELOR OF COMPUTER SCIENCE; BACHELOR OF INFORMATICS; BACHELOR OF GEOINFORMATION TECHNOLOGY	
QUALIFICATION CODES: 07BCMS; 07BACS 07BAIT; 07BAIF; 07GITB	**LEVEL:** 6
COURSE CODE: DPG621S	**COURSE NAME:** DATABASE PROGRAMMING
SESSION: NOVEMBER 2024	**PAPER:** PAPER 1
DURATION: 3 HOURS	**MARKS:** 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINERS:	DR GEREON KOCH KAPUIRE, MS SHILUMBE CHIVUNO-KURIA, MS JOSEPHINA MUNTUUMO, MR ANDREW TJIRARE
MODERATOR:	MS ROSETHA KAYS

INSTRUCTIONS
1. Answer ALL the questions.
2. Read all the questions carefully before answering.
3. Number the answers clearly.
4. Write your "Section A" answers in the answer booklet provided.
5. Copy and paste your final code into Notepad and save it to the exam folder on E-Learning.

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Including this front page)

Section A – Theory (10 Marks)

<u>Question 1</u>
Choose True or False   [10 Marks]

No	Questions	True (T)	False (F)
1	The EXECUTE statement in SQL Server is used to invoke a stored procedure.		
2	Transactions cannot be explicitly started and committed within a stored procedure.		
3	The order in which parameters are defined in a SQL Server stored procedure must match the order in which they are passed during the procedure call.		
4	Input parameters in SQL Server stored procedures can be modified within the procedure.		
5	Triggers can be used to log information about INSERT, UPDATE, and DELETE operations for auditing changes to a table.		
6	The CASE statement in SQL Server can only be used in SELECT and WHERE clauses.		
7	SQL Server supports a traditional FOR loop, similar to those found in procedural programming languages.		
8	Parameters in SQL Server stored procedures can have default values.		
9	Cursors in SQL Server are used to iterate through a result set row by row.		
10	Transactions can be explicitly started and committed within a stored procedure.		

Section B – Practical (90 Marks)

(For this section, utilise SQL Server Management Studio (SSMS) on your computer).

Instructions: Copy and paste your final code into Notepad and save it on the exam folder on E-Learning. Ensure that you number your code appropriately. Refer to the scenario and table below to aid your understanding of the preceding questions.

Scenario:

You are tasked with designing and developing an application that tracks university graduates (alumni) for the university's alumni association. This online-based application aims to improve the current process of tracking alumni and providing their data to the relevant college faculties.

To achieve this, you must use the following table structure to store the alumni data:

```
CREATE TABLE Alumni (
AlumniID INT PRIMARY KEY IDENTITY(1,1),
FirstName VARCHAR(100),
LastName VARCHAR(100),
GraduationYear INT,
Degree VARCHAR(100),
Email VARCHAR(100) UNIQUE,
ContactNumber VARCHAR(20),
EmploymentStatus VARCHAR(50),
Faculty VARCHAR(100),
LastUpdated DATETIME DEFAULT GETDATE() );
```

Question 1   [10 Marks]

Write a stored procedure to insert a new alumnus into the Alumni table, ensuring that no duplicate email addresses are allowed.

Question 2   [6 Marks]

Create a stored procedure that updates the employment status of an alumnus based on their AlumniID.

Question 3   [5 Marks]

Develop a stored procedure that retrieves alumni data for a specific faculty and graduation year.

Question 4   [4 Marks]

Write a trigger that prevents the deletion of any alumni record.

Question 5   [4 Marks]

Create a stored procedure that returns a summary of alumni employment status, grouped by employment status.

Question 6   [12 Marks]

Write a stored procedure that updates the employment status of all alumni who graduated in a particular year. The update should be wrapped in a transaction, and if any error occurs, the transaction should be rolled back.

Question 7   [10 Marks]

Write a stored procedure that checks if an email address already exists in the Alumni table. If it does, print an error message; otherwise, insert the new alumni record.

Question 8   [14 Marks]

Write a stored procedure using a cursor that retrieves alumni from a specific faculty and prints their full names.

Question 9   [10 Marks]

Create a stored procedure that inserts a new alumni record into the Alumni table. If an error occurs during the insert (e.g., duplicate email), catch the error and print a user-friendly

message.

Question 10   [8 Marks]

Write a stored procedure that prevents the insertion of a new alumni record if the contact number is not provided (i.e., the parameter @ContactNumber is empty or NULL). Use an IF statement to check this condition and print a relevant message.

Question 11   [7 Marks]

Write a stored procedure that updates the degree of all alumni who graduated before the year 2000. Use an IF statement to check whether the GraduationYear is before 2000, and if true, update the degree to 'Legacy Graduate'. The procedure should print a message if no alumni qualify for the update.

<<<<<<End of Exam Paper>>>>>