



**Scott Christian
UNIVERSITY**
A Dynamic Centre of Academic Excellence

SCHOOL OF EDUCATION AND BUSINESS STUDIES

UNIT CODE/NAME: DCT 026: DATABASE DESIGN AND PROGRAMMING

May-August 2024/2025 End of Semester Exams - Time: 2 Hours

Instructions: Answer Question ONE (Compulsory) and any other TWO questions.

QUESTION ONE (30 MARKS)

(a) Define the following terms: **(2 Marks)**

a) database

b) Database systems

ii) Differentiate flat file systems from database systems **(2 Marks)**

iii) Mention the advantages and disadvantages of database systems **(2 Marks)**

(c) Define the following terms: **(4 Marks)**

(i) Entity Integrity

(ii) Referential Integrity

(iii) Database Schema

(iv) Normalization

(d) Explain the following concepts: **(6 Marks)**

(i) Data Manipulation Language (DML)

(ii) Data Control Language (DCL)

(iii) Data Definition Language (DDL)

(c) Describe the types of update anomalies that may occur on a table that has redundant data.

(4 Marks)

(d) Discuss the purpose of a design methodology in database design.

(2 Marks)

(e) Identify and explain factors that can be used to measure the efficiency of a database management system (DBMS). (4 Marks)

(f) Explain what is meant by a Database Management System (DBMS) and discuss the motivation behind providing such a system. (4 Marks)

QUESTION TWO (15 Marks)

(a) What is the purpose of Open Database Connectivity (ODBC)? (4 Marks)

(b) Consider an employee table with the following fields: empno, empname, dateofbirth, deptcode, basic salary. Write SQL commands for the following operations: (11 Marks)

(i) Add a new field for marital status.

(ii) Add a new record with sample data.

(iii) List records of employees whose salary is between 50,000 and 100,000.

(iv) List records of employees in descending order of their empno.

QUESTION THREE (15 Marks)

(a) Why is it necessary to select the target DBMS before beginning the physical database design phase? (3 Marks)

(b) Discuss the two main activities associated with application design. (4 Marks)

(c) Describe the potential benefits of developing a prototype database system. (4 Marks)

(d) Discuss the main activities associated with the implementation stage of database design. (4 Marks)

QUESTION FOUR (15 Marks)

a) Explain what you understand by data normalization, stating each of the three normal forms. (4 Marks)

b) Explain the various structures of SQL. (6 Marks)

c) Differentiate primary key, foreign key, composite key (5 Marks)

QUESTION FIVE (15 Marks)

a.) Explain the components of database management systems (5 Marks)

b.) Identify and explain the functions of the DBMS (4 Marks)

c.) State the steps which are involved in the Database life cycle (6 Marks)

