NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, Plot 91, Cadastral Zone, Nnamdi Azikiwe
Expressway, Jabi – Abuja
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2025_2 EXAMINATIONS_

Course Code: **CIT844**
Course Title: **Advanced Database Management System**
Credit: **2 units**
Time allowed: **2 Hours**
Instruction: Answer Questions **ONE (1)** and any other **TWO (2)**

QUESTION ONE

    a. Identify three (3) potential problems which should be addressed by successful concurrency control (3 Marks)
    b. Highlight both the advantages and disadvantages of distributed database (8 Marks)
    c. What is a Relational Database? (3 marks)
    d. As a computer scientist in the making, explain to a layman what the Ring Algorithm is in a distributed system. (8 Marks)
    e. Describe the features of a Physical Data Model (5 Marks)
    f. What are the two major Set Theoretic Operations? (3 marks)

QUESTION TWO

    a. Define the following:
        i. Primary Key   **1.5 Marks**
        ii. Normalization **1.5 Marks**
    b. What are the features of an ideal and well-structured database design? (4 marks)
    c. What is a Data Warehouse? (3 Marks)
    d. Give a detailed description of five (5) database system shortfalls which could lead to transaction ACID failure. (10 marks)

QUESTION THREE

    a. Define Concurrency Control. **(3 Marks)**
    b. What are the main characteristics of Data Warehouse **(4 Marks)**

c. Describe the concept of Transaction in Database management system? (3 marks)

d. What are options of operations available to a database management system if a deletion transaction causes a violation? **(6 marks)**

e. Give an overview explanation the following SQL function.**(4 marks)**

    i.   Insert Operation

    ii.   Join Operation

QUESTION FOUR

a. Briefly discuss the following database technical terms: **(10 marks)**

    (i)   Management of Metadata

    (ii)   Maintenance of a Large Database

    (iii)   Data Durability

    (iv)   Provides a High Level of Data Security

    (v)   Enhanced File Uniformity

b. Describe the major query and update commands of the Data Manipulation SQL. **(6 Marks)**

c. What is an Entity Relationship Model? **(4 Marks)**

QUESTION FIVE

a. Explain six (6) most important Data Definition Language DDL statements in SQL. **(9 marks)**

b. What is a database system catalogue? **(3 Marks)**

c. List the hardware protection categories mostly observed for database maintenance. **(3 Marks)**

d. Highlight the goals of a database Security Measures? **(3 Marks)**

e. What is an atomic value? **(2 marks)**