



National Open University of Nigeria

Plot 91, cadastral Zone, Nnamdi Azikiwe Express Way, Jabi, Abuja

FACULTY OF SCIENCES

2021\_1 EXAMINATION

COURSE CODE: CIT844

TITLE: ADVANCED DATABASE MANAGEMENT SYSTEMS

CREDIT: 2 CREDIT UNITS

TIME ALLOWED: 2HRS.

INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER THREE (3)

QUESTION 1 (25 marks) Compulsory

- A. Describe a domain and give at least five (5) examples. (6 marks)
- B. A relational database is a type of database; discuss with a suitable example. (4 marks)
- C. As with functional dependencies, multivalued dependencies can be used in two different ways, discuss. (3marks)
- D. What is a database management system? List the system procedures involved in a typical database system. (6 marks)
- E. SQL - structured query language is a standard language for accessing and manipulating databases. However, most actions performed on a database are done using SQL statements, these statements are divided into two parts. Discuss stating at least 4 commands in each part (6 marks)

QUESTION 2 (15 marks)

- A. Explain database system catalogue (3 marks)
- B. Briefly discuss the steps involved in the design of a typical database design up to full implementation. (6 marks)

- C. What are database operational procedures? List the factors that influence the selection of an optimal strategy using the join strategies (6 marks)

QUESTION 3 (15 marks)

- A. The strategy we choose for a query depends upon the size of each relation and the distribution of values within columns. In order to be able to choose a strategy based on reliable information, database systems may store statistics for each relation  $r$ . Discuss. (7 marks)
- B. What is a distributed database system? State the advantages and disadvantages of data distribution. (8 marks)

QUESTION 4 (15 marks)

- A. State the XML naming rules (4 marks)
- B. What is a transaction? Briefly explain the set of properties that guarantee that database transactions are processed reliably. (5 marks)
- C. Explain any three (3) data mining functions. (6 marks)

QUESTION 5 (15 marks)

- A. Apart from the specific GIS applications, identify three (3) other database functionalities that GIS database is also subjected to (3 marks)
- B. Highlight any four (4) topology that exists in distributed database systems (4 marks)
- C. State and briefly explain the three (3) disadvantages of data distribution (6 marks)
- D. Differentiate between centralized and distributed database systems (2 marks)