NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI, ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF COMPUTER SCIENCE
OCTOBER, 2019 EXAMINATIONS

COURSE CODE: CIT427
COURSE TITLE: DATABASE SYSTEMS AND MANAGEMENT
COURSE CREDIT: 3 UNITS
TIME ALLOWED: 2½ HOURS
INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER FOUR (4) QUESTIONS

QUESTION ONE (COMPULSORY) 22MARKS

a. What is Database Management System? (**3marks)**
b. State the basic deficiencies of the navigational model of the Codasyl. (**3marks)**
c. Give any four duties of a Database administrator. (**2marks)**
d. Write a suitable SQL command to create a StudRec table consisting of the following data items and size:
studsurname (17 characters), studfirstname (15 characters), studdept (20 characters), studmatno (10 characters). The primary key is studmatno.
(**3marks)**
e. What is the relationship between XML and SGML (**3marks)**
f. State any 4 XML development goals based on W3C recommendation. (**2marks)**
g. What are web services? (**2marks)**
h. What are Domain Key Normal Form (DKNF) (**2marks)**
i. Define data independence. (**2marks)**

QUESTION TWO (12MARKS)

a. Write briefly on Database Servers. (**3marks)**
b. Explain how the relational DBMS stores and work with large databases. (**3marks)**
c. Write briefly on the following features of DBMS:
i. Query ability **(2marks**) ii. Backup and replication (**2marks)** iii. Automated Optimisation (**2marks)**

QUESTION THREE (12MARKS)

a. Briefly discuss the following pairs
   i. Physical data independence and logical data independence. (**3marks)**
   ii. Data Definition Language (DDL) and Data Manipulation Language (DML) (**3marks)**
b. Distinguish between the following pairs

i. Dynamic Random Access memory and Static Memory (**2marks)**
ii. Mutable storage and Read Only Storage (**2marks)**

c. Give two (2) advantages and two(2) disadvantages of web services (**2marks)**

QUESTION FOUR (12MARKS)

a. Define the following:
   i. Query processor (**1mark)** ii. DML Precompiler (1**mark)** iii. DDL Compiler (**1mark)** iv. File Manager (**1mark)**
b. Explain the term "Existence Dependencies" (**2marks)**
c. List the six (6)operations of relational algebra as it relates to databases. (**3marks)**
d. Distinguish between instances and schemes in a database. (**3marks)**

QUESTION FIVE (12MARKS)

a. State the SQL equivalent of the following relational algebraic operators:
   i. Selection Predicate (**1mark)** ii. Cartesian product (**1mark)** iii. Project (**1mark)**
b. Write the syntax for Delete in SQL. Illustrate with an example. (**2mark)**
c. Write a suitable SQL Insert command to Insert a record for a customer who has ₦50,000 in account 200112012 at XYZ Bank, in Egor Branch. (**3marks)**
d. In addition, provide each loan the customer has in XYZ Bank, Egor branch with a ₦10,000 saving account using suitable SQL commands. (**2marks)**
e. With suitable1 SQL commands, increase all account balances in XYZ branch by 25 percent. (**2marks)**

QUESTION SIX (12MARKS)

a. State four distinctions between primary storage and secondary storage. (**4marks)**
b. Write a short note on "offline storage". (**3marks)**

c, i.What is computer data storage?

ii. Draw a diagram depicting the levels of storage in computer systems. } (**5marks)**