CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF
DIPLOMA IN COMPUTER SCIENCE**

COSC 0150: DATABASE SYSTEM 1

STREAMS: DIP. COMP. SCI Y1S2   **TIME: 2 HOURS**

DAY/DATE: FRIDAY 26/03/2021   **11.30 A.M. – 1.30 P.M**

INSTRUCTIONS:
- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.
- Marks are awarded for clear and concise answers.

SECTION A (ANSWER ALL QUESTIONS IN THIS SECTION)

QUESTION ONE (30 MARKS)

a) Define the following terms

    i.   Tuple   [1 mark]

    ii.   Database   [2 marks]

    iii. Cardinality   [2 marks]

    iv. Database management system   [2 marks]

b) Why would your advice a client to use DBMS as opposed to a file based system in his/her premises.   [4 marks]

c) State and explain the two types of data independence   [4 marks]

d) Write an SQL statement to create a new database and name it FINANCE.   [2 marks]

e) State the differences between primary key and foreign key. [4 marks]

f) State two participation constraints in DBMS [2 marks]

g) The use of DBMS in an organization gives it a number of benefits, however DBMS has a number of drawbacks. State three disadvantages of DBMS [3 marks]

h) State any two importance of having keys in a DBMS [2 marks]

i) What is meant by term degree of relationship? [2 marks]

SECTION B (Answer any TWO questions)

QUESTION TWO (20 marks)

a) You have been granted a chance to work as an attaché in a certain organization. After some time, you realized the system used in the organization is a file based system. Explain five reasons why would your advice the manager to change to a DBMS as opposed to the file based system [10 marks]

b) Discuss the three types of DBMS architecture. [6 marks]

c) Discuss two commands under Data Control Language (DCL) in SQL [4 marks]

QUESTION THREE (20 marks)

a) Define the term entity and give an example [2 marks]

b) Discuss three types of entity attributes in DBMS [6 marks]

c) Write an SQL statement to help create the STUDENT_TABLE depicted below. [6 marks]

Column name	Data type	Constraint
StudentID	Int	PRIMARY KEY
Student_first_name	Varchar(20)	NOT NULL
Student_last_name	Varchar (20)	NOT NULL
Student_phone_No	Varchar (20)	UNIQUE
Student_birthdate	Date/time	NOT NULL

d) Explain three data models found in DBMS [6 marks]

QUESTION FOUR (20 MARKS)

a) Discuss any five application areas of DBMS   [10 marks]

b) Suppose you have been invited to an interview for SQL developer position you had applied for. The panelists desire to know your knowledge and expertise in dealing with SQL language. As per the interview panel requirements, discuss the terms below while explaining what the term stands for, at least three commands it provides and the function of the commands.

    i.   DDL.   [4 marks]

    ii.   DML.   [4 marks]

c) State the difference between TRUNCATING a table and DELETING a table   [2 marks]

QUESTION FIVE (20 MARKS)

a) With the aid of a diagram briefly describe the three level database architecture diagram

                                                                                                                [6 marks]

b) Data integrity checks can be divided into four groups state and briefly describe each

                                                                                                                [8 marks]

c) Data security is a key area to be considered when dealing with data. Assuming you are a database administrator, explain three ways you would ensure the security of data stored in your databases.   [6 marks]