UNIVERSITY EXAMINATION

CHUKA   UNIVERSITY

RESIT/SPECIAL EXAMINATION

EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0150: DATABASE SYSTEM 1

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

DAY/DATE: FRIDAY 05/11/2021   **2.30 P.M – 4.30 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   [2 mark]
  ii. Database   [2marks]
  iii. Database management system   [2marks]
  iv. Relation   [2 marks]
b) State any THREE importance of having keys in a DBMS   [3 marks]
c) Discuss the term constraints as used in databases and give at least THREE constraints
                                                                      [4 marks]
d) State THREE conditions that a field should meet to qualify to be a primary key
                                                                      [3 marks]
e) State TWO differences between foreign keys and primary keys in a database   [4 marks]

f) Discuss data definition language (DDL) in SQL and give three commands used

[4 marks]

g) Differentiate a composite key from a compound key as used in database [4 marks]

SECTION B (ANSWER TWO QUESTIONS IN THIS SECTION)

QUESTION TWO [20 MARKS]

a) The use of DBMS gives an organization several benefits, however DBMS has a number of drawbacks. State and explain THREE disadvantages of DBMS [6 marks]
b) With the aid of a well labelled diagram, discuss the three level architectural diagram of a DBMS [6 marks]
c) Discuss the ACID properties of transactions [8 marks]

QUESTION THREE [20 MARKS]

a) Discuss the following data integrity constraints
  i.   Domain integrity [2 marks]
  ii. Entity integrity [2 marks]
  iii. Referential integrity [2 marks]
  iv. User-defined integrity [2 marks]
b) Discuss four data models in DBMS [8 marks]
c) By the aid of an illustration, differentiate between sparse index and dense index as used in database indexing [4 marks]

d) Differentiate between database schema and database instance [4 marks]

QUESTION FOUR [20 MARKS]

a) Define the term entity as used in DBMS [2 marks]
b) Discuss FOUR types of attributes that an entity can have [8 marks]
c) Given a student and school as entities, the student has attributes such as RegNo, email, phone number, age, date of birth and name which is made up of first_name and last_name, the school has school code and school name as attributes, Draw the ER diagram [6 marks]

d) Discuss the function of the following SQL commands [4 marks]

  i.   GRANT

  ii. REVOKE

QUESTION FIVE [20 MARKS]

a) Discuss any FIVE application areas of DBMS [10 marks]
b) Use the table below to answer the following questions

EMPNO	ENAME	JOB	DEPTNO
101	John	Manager	1010
102	Mark	Clerk	1010
103	Eunice	Secretary	1085
104	Steve	Analyst	2047

i. Write SQL command to create the above table   [4 marks]

ii. Write SQL command to insert the first TWO rows of the above table   [4 marks]

iii. Write SQL command display the employees who belong to DEPTNO 1010

[2 marks]