

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATION
RESIT/SUPPLEMENTARY / SPECIAL EXAMINATIONS
EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE**

COSC 0150: DATABASE SYSTEM I

STREAMS: DIP COMP. SCI (Y1S2)

TIME: 2 HOURS

DAY/DATE: MONDAY 01/11/2021

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

- Tuple [2 mark]
- Database [2marks]
- Database management system [2marks]
- 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]

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