

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

COSC 0150: DATABASE SYSTEMS I

STREAMS: DIP (COMP SCI) YIS2

TIME: 2 HOURS

DAY/DATE: TUESDAY 14/04/2020

11.30 AM – 1.30 PM

INSTRUCTIONS:

- **Answer question one and any other two from section B**
- **Do not write on this paper**

SECTION A {compulsory}

QUESTION ONE: COMPULSORY (30 MARKS)

- a) Distinguish between Conceptual, Logical and Physical Database Design. (6 mks)
- b) In terms of a database sub-language, give a definition and describe the function of each of the following:
- i. Data Definition Language (2mks)
 - ii. Data Control Language (2mks)
 - iii. Data Manipulation Language (2mks)
- c) List 3 Field data types supported in databases? (3mks)
- d) A student wants to store the following student information on a database named **School** and a table named **Student**.**

Student table

- i. StudentId (primary key)
- ii. Studentname
- iii. Course
- iv. Phonenumber
- v. Email

Write the SQL statement to create the table shown above and enforce the primary key constraint. (5mks)

- e) Write an SQL command that would do each of the following.
 - i. Create a new database called **School**. (2mks)
 - ii. Display all records and columns from the **Students** table (2mks)

- f) Define the following terms as used in databases.
 - i. Database. (2mks)
 - ii. Primary key (2mks).
 - iii. Tuple (2mks).

SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 MRKS)

- a) Describe the five components of the DBMS and discuss how they relate to each other. (10mks)

- b) Explain the phases in the Database Development Life Cycle. (4mks).

- c) Describe three different views of a database. (6mks).

QUESTION THREE (20 MRKS)

- a) Create the following tables called STAFF using the described properties below in a database called Nyumbani in MYSQL. (10 mks)

Column name	Data type	Size	Properties	Nullity
staff_no	INT	-	PRIMARY KEY	NO
branch_no	INT	-	FOREIGN KEY (References branch(branch_no))	NO
staff_surname	VARCHAR	20	-	YES
staff_othersnames	VARCHAR	30	-	NO
staff_street	VARCHAR	25	-	NO
staff_town	VARCHAR	20	-	NO
staff_pcode	INT	-	-	NO
staff_telno	VARCHAR	12		YES
staff_gender	VARCHAR	1		NO
staff_salary	DOUBLE	-	-	NO

- b) Brookside dairy have a system of tracking the deliveries made by their cars to the different distributors. You have been working there on attachment and just realized that the system is a file

based system. Explain Why would you advice the government to change to a DBMS as opposed to a file based system (10mks).

QUESTION FOUR (20 MRKS)

a. Table Name: Student

StudentID	StudentName	Degree	Telno	County
BED/145	Jane	BED	0712365965	Nyeri
MED/389	David	MED	0712369852	Kisumu
BBIT/2356	Mary	BBIT	0174569325	Kiambu
BCOM	Jane	BCOM	0712369852	Meru
BED/145(SB)	Peter	BED	0174569325	Nairobi

- i. Write SQL statement to CREATE the above table and insert the data in the table (6 mrks)
 - ii. Write SQL statement to DELETE Mary (2 mrks)
 - iii. Write SQL statement to UPDATE David's Telno to 020456369 (2 mrks)
 - iv. Write SQL statement to CREATE a database named MKU_DB (4 mrks)
- a. Explain the following (6 mrks)
- i. First Normal Form (1NF)
 - ii. Second Normal Form (2NF)
 - iii. Third Normal Form (3NF)

QUESTION FIVE (20 MARKS)

- a) Using illustrations define the following terms
- i. Entity (3mks)
 - ii. **Attributes** (3mks)
- b) Explain the following database models
- i. Relational Model (2mks)
 - ii. Object- Oriented (3mks)
 - iii. Network Model (3mks)
- c) With examples, define the following relationships
- i. One-to-Many (2mks)
 - ii. One-to-One (2mks)
 - iii. Many-to-Many (2mks)