(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

END OF SEMESTER EXAMINATION

SECOND YEAR FIRST SEMESTER EXAMINATION

FOR THE DIPLOMA IN

(INFORMATION TECHNOLOGY)

COURSE CODE: **DIT 059**

COURSE TITLE: **INTRODUCTION TO DATABASE SYSTEM**

DATE: 05/09/2022 **TIME: 2.00 P.M. – 4.00 P.M.** **2HRS**

INSTRUCTIONS TO CANDIDATES:
ANSWER QUESTIONS ONE AND ANY OTHER TWO.

Paper Consists of 3 Printed Pages. Please Turn Over

QUESTION ONE (24 MARKS) - COMPULSORY

a. State two reasons that led to the development of database management system. **(2marks)**

b. Define the following terms as use in database systems **(4Marks)**

i. Database

ii. Database management systems

c. Differentiate between traditional file processing and database management systems **(8Marks)**

d. ***Relationships*** are the glue that holds the tables together state and explain three types of relationships found among the tables in a database **(6Marks)**

e. List any four Structured Query Language (**SQL**) statements and state their meaning **(4Marks)**

QUESTION TWO (18MARKS)

a. Define the term normalization as used in database **(2Marks)**

b. A software contract and consultancy firm maintains details of all the various projects in which its employees are currently involved. These details comprise:

Employee Number
Employee Name
Date of Birth
Department Code
Department Name
Project Code
Project Description
Project Supervisor

Assume the following:

Each employee number is unique.
Each department has a single department code.
Each project has a single code and supervisor.
Each employee may work on one or more projects.
Employee names need not necessarily be unique.

Project Code, Project Description and Project Supervisor are repeating fields.

Normalize this data to Third Normal Form. **(10Marks)**

c. State an explain three types of data anomalies in database **(6Marks)**

QUESTION THREE (18MARKS)

a. write an **SQL** statement that **creates** the table below **(5Marks)**

Student table

REG NO	FNAME	LNAME	COURSE	DEPARTMENT

b. write an SQL statement that **inserts** the following values in table in b.i above
REG NO= 'dit/0001/2020', **FNAME**= 'joseph', **LNAME**='Israel', **COURSE**='diploma in it', **DEPARTMENT** = 'IT'. **(5Marks)**

c. write an **SQL** statement that **selects** students **REG NO, FNAME** and **DEPARTMENT** **(3Marks)**

d. write an **SQL** statement that updates **FNAME** of the value inserted in student table in b.ii above to Samuel **(5Marks)**

QUESTION FOUR 18MARKS

Describe the following database models

a. Hierarchical Model (4Marks)

b. Network Model (4Marks)

c. Entity-relationship Model (5Marks)

d. Relational Model (5Marks)

QUESTION FIVE 18 MARKS

a. Define the term a transaction as used in database systems (2Marks)

b. State an explain the **four** properties of a transaction (8Marks)

c. Using a diagram describe **five** states of a transaction (5Marks)

d.

i. define the term deadlock as use in a transaction (1Mark)

ii. state an explain any two concurrency control mechanisms (2Marks)