



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

SECOND YEAR SECOND SEMESTER EXAMINATIONS

MAIN EXAMINATION

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN GEOSPATIAL INFORMATION SCIENCE**

**COURSE CODE: DPG 207
COURSE TITLE: GIS DATABASE**

DATE: 18/4/2023

TIME: 8-10 AM

INSTRUCTIONS TO CANDIDATES

This paper contains **FOUR (4)** questions
Question **one (1)** is compulsory {total = 30 Marks}
Attempt **any other two (2)** {total = 40 Marks} from the remaining questions
Be brief and to the point

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over →

SECTION I: COMPULSORY (30 MARKS)

Question One

- a) Describe the following.
- i. Primary key (2marks)
 - ii. Tuple (2marks)
 - iii. Database (2marks)
 - iv. Foreign key (2marks)
- b) Describe the following database languages.
- i. Data definition language (DDL) (3marks)
 - ii. Data manipulation language (DML) (3marks)
- c) Outline four (4) advantages of a database (8marks)
- d) Outline any four (4) disadvantages associated with the file-based system (8marks)

SECTION II: ATTEMPT ANY OTHER TWO (2) QUESTIONS (40 MARKS)

Question Two

- a) Explain the functions of each of the clauses in an SQL statement (5marks)
- i. WHERE
 - ii. GROUP BY
 - iii. HAVING
 - iv. SELECT
 - v. ORDER BY
- b) Study the following database **Table 1** that stores students' records and then answer the questions that follow.

Table 1

Reg_no	First_Name	Last_Name	Course	Gender	DOB
1/2016	John	Makau	DPG	Male	13/6/1990
2/2016	Steve	Kipkorir	DPG	Male	13/3/1983
3/2016	Susan	Mutua	CIT	Female	19/11/1986
4/2017	Steve	Kingori	DBIT	Male	1/3/1978

Write the following SQL statements to perform the following.

i. Display all the students where the results will only contain the columns Reg_no, Last_Name.

(2marks)

ii. To find the details of all Male students in the course DPG **(2marks)**

iii. To produce the Last_Name and First_Name combined as students **(2marks)**

iv. To produce the total number of students per Course **(2marks)**

v. Get the list of all the Male students born between the year 1980 and 1989

(2marks)

vi. To modify the Last_Name of the student Reg_no 4/2017 to Mwangi **(3marks)**

vii. To delete all the students records from the table **(2marks)**

Question Three

a) Discuss the following database Normalization levels:

i. 1ST Normal Form **(3marks)**

ii. 2ND Normal Form **(3marks)**

iii. 3RD Normal Form **(3marks)**

b) **Table 2** shows data in unnormalized form. Use it to answer the question that follows:

Table 2

Sid	Sname	Saddress	Pno
1	David	Meru, Kenya	P1,P2
2	Collins	Kakamega, Kenya	P3
3	Jane	Migori, Kenya	P4,P5
4	Atieno	Busia, Kenya	P6

Normalize to the Second Normal Form (2NF)

(11 marks)

Question Four

Using illustrations describe the following database models and state their advantages and disadvantages.

a) Hierarchical data model **(10marks)**

b) Network data model **(10marks)**