



(University of Choice)

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

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATION**

**FOR THE DIPLOMA**

**OF**

**INFORMATION TECHNOLOGY**

**COURSE CODE: DIT 059**

**COURSE TITLE: DATABASE SYSTEMS**

**DATE: 28/07/2022**

**TIME: 10.00AM-12.00PM**

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**INSTRUCTIONS TO CANDIDATES**

Answer **SECTION A** and any other **Two** questions from **SECTION B**

**TIME: 2 Hours**

MMUST observes **ZERO** tolerance to examination cheating

### Section A: 24 marks

1. Define the following terms.
  - i. Database management system
  - ii. Data
  - iii. Weak entity
  - iv. database **(4 Marks)**
2. (a) Explain the function of the following in database management Systems
  - i. Data Manipulation Language
  - ii. Data definition language **(4 marks)**
3. Describe the following relationships in database systems **(4 marks)**
  - a) One to One
  - b) One to Many
  - c) Many to One
  - d) Many to Many
4. (a) With the aid of an example in each case, describe each of the following attributes as used in database systems
  - (i) Key **(2 marks )**
  - (ii) Composite **(2 marks)**
  - (iv) Derived **(2 marks )**
5. (a) Outline Any **Four** Characteristics of a database **(4 Marks)**  
(b) State Two reasons why DBMS is necessary in a banking institution **(2 Marks)**  
(c) State any Two disadvantages of a database Management system **(2 marks)**

### Section B: 36 Marks

1. (a) State and explain any **Four** application areas of Database Management System **(8 Marks)**  
(b) State and explain Two things that need to be optimized with dealing with large amount of data in database systems **(4marks)**  
(c) State **Any Two** commands used under each of the following database languages
  - (i) Data Manipulation Language
  - (ii) Data Definition Language
  - (iii) Data Control Language **(6 Marks)**

2. (a) Rahab and company limited would like to automate their processes. Their ICT personnel asked you to advise them on the best DBMS architecture to adopt. With aid of a well labelled diagram describe the THREE possible DBMS architecture they can think of

**(12 marks)**

- (b) An organization intends to acquire a database application system to manage its data. Describe three professionals that may be required for the exercise **(6 Marks)**

3. (b) In a university, a student Enrolls in Courses. A student must be assigned to at least one or more courses. Each Course is taught by a single Lecturer. To maintain instruction quality, a Lecturer can deliver only one course. As a system analyst, draw an E-R diagram showing the attributes and their relationships **(6 Marks)**

- (b) State the Data Definition Language (DDL) to be used to carry out the following operations **(6 Marks)**

- i).To create the database instance
- ii).To alter the structure of database
- iii).To drop database instances
- iv). To rename database instances

- (c) Describe each of the following components of a three-tire database structure

- i. Application tier
- ii. Presentation tier
- iii. Data tier

**(6 Marks)**

