MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY

UNIVERSITY ORDINARY EXAMINATION
2020/2021 ACADEMIC YEAR

FIRST YEAR **ONE** SEMESTER EXAMINATION FOR, DIPLOMA IT/CS

UNIT CODE: SIT 051/IT/0S/ICT/CT/7/7

UNIT TITLE: DATABASE MANAGEMENT SYSTEMS

DURATION: 2 HOURS

Instructions to candidates:

1. Answer question One and Any Other Two questions.

2. Mobile phones are not allowed in the examination room.

3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE

(a) Define the following terms as used in database systems,
- (i)   Data base   (2 marks)
- (ii)   Data redundancy.   (2 marks)
- (iii)   Database management system   (2 marks)
- (iv)   Entity   (2 marks)
- (v)   Relational database.   (2 marks)

(b) Differentiate between logical and physical view as applied in database management systems.
                                                                                                    (2 marks)

(c) Discuss and explain the following database models
- (i)   Hierarchical database model   (2marks)

- (ii)   Network database   (2 marks)

(d) Distinguish between a schema and an instance.   (2 marks)

(e) Define the term constraints as applied in databases and discuss any three (3) integrity constraints as used in relational DB.   (6 marks)

(f) Differentiate between client/server database system and centralized database system giving an advantage for each.   (6 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO

(a) Explain any **four** DBMS utilities.   (4 marks)

(b) Briefly describe **three** levels of a database schema

(c) Differentiate between entity type and an entity instance.   (6 marks)

(d) Carefully explain the database system life cycle   (6 marks)

(e) Give and explain any t**wo** disadvantages of a file based system   (2 marks)

QUESTION THREE

(a) What is normalization?   (2 marks)

(b) Explain the first **three** normal forms   (6 marks)

(c) Use the following information to draw the relevant ER diagram

Invoice (Invoice-no, Customer Number, Pro-code, date, invoice total)

Invoice Product (Pro-code, Prod-description, Unit price)

(d) Customer (Customer number, customer –Name, customer –address, del. address) (4 marks)

(e) Explain any **two** rules that are followed in normalizing a relational database (4 marks)
   (e) The following table is which normal form? Explain. (4 marks)

Students Number	Unit code	Unit title	C.F	marks

QUESTION FOUR (20 MARKS)

(a) Differentiate between a primary key and a candidate key. (4 marks)

(b) Highlight **four** problems associated with traditional file processing systems. (4 marks)

(c) Explain how the database approach tends to solve the (b)

(d) above. (2 marks)

(e) Explain the following database design concepts

(i)   Normalization (2 marks)

(ii)   Functional dependency. (2 marks)

(iii)   Transitive dependency. (2 marks)

(iv)   Partial functional dependency (2 marks)

(v)   1 normal formal (2 marks)