(Knowledge for development)

KIBABII UNIVERSITY

(KIBU)

UNIVERSITY EXAMINATIONS

2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS

YEAR ONE SEMESTER ONE EXAMINATIONS

FOR CERTIFICATE IN

(INFORMATION TECHNOLOGY)
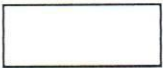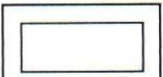
COURSE CODE : ITC 012

COURSE TITLE : INTRODUCTION TO DATABASES

DATE: 28/01/2022   **TIME:** 8.00 A.M. - 10.00 A.M.

INSTRUCTIONS TO CANDIDATE

ANSWER **QUESTION ONE** AND **ANY OTHER TWO**

QUESTION ONE (COMPULSORY) [24 MARKS]

a. Define the following terms

   i) Data   (1 mark)

   ii) Information   (1 mark)

   iii) Database Management System   (2 marks)

b. Distinguish authentication and authorization as used in DBMS.   (4 marks)

c. Describe **Three** types of Database Management System users.   (6 marks)

d. Describe **Four** components of Database Management System.   (8 marks)

e. Outline the function of each of the following symbols used in an Entity Relationship Diagram.

   i)   (1 mark)

   i)   (1 mark)

QUESTION TWO [18 MARKS]

a. Describe **Two** components of a Relational Database.   (4 marks)

b. Differentiate between data redundancy and data inconsistency.   (4 marks)

c. What are the ACID Properties of DBMS? Explain any **Two**.   (6 marks)

d. A database is a collection of 1 or more 'relations', and a relation consist of Relation Schema and Relation Instance. Distinguish the terms Relation Schema and Relation Instance as used in DBMS.   (4 marks)

QUESTION THREE [18 MARKS]

a. Due to the evolution of DBMS, companies and institutions are getting more from their work because they can keep records of everything. Also, it makes them faster to search information and records about any people/client or product that makes them more effective in work. Discuss any **FIVE** application areas of DBMS.   (10 marks)

b. A database of students' details has the following field; Registration Number, Name, Course, Sex, Date of Birth and Phone Number.

For each field mentioned above, identify the most suitable data type.   (6 marks)

c. State any **TWO** data types of Ms Access. (2 marks)
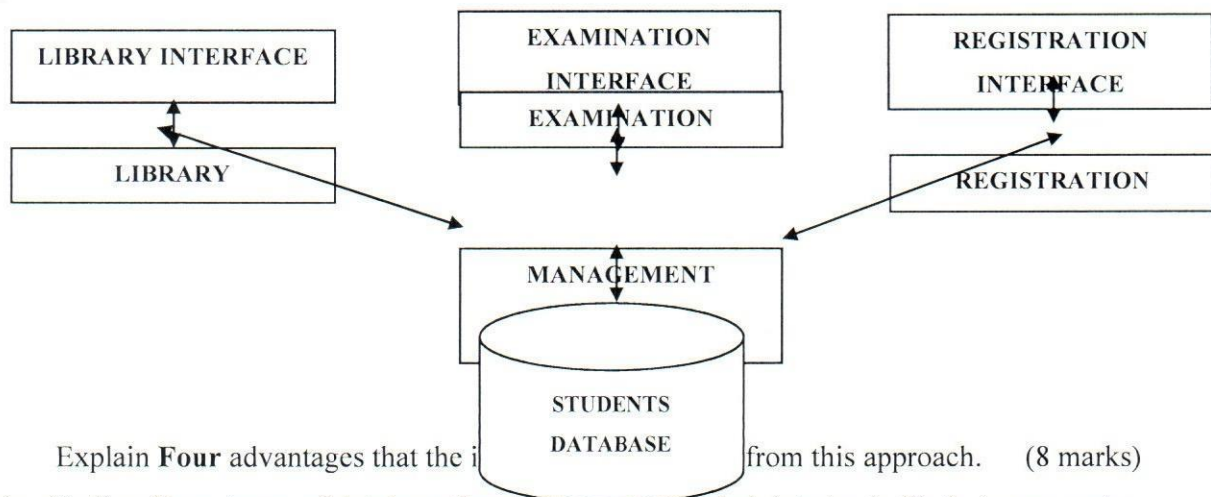
QUESTION FOUR [18 MARKS]

a. Define the following terms

    i) Relational Database (2 marks)

    ii) Hierarchical Database (2 marks)

    iii) Network Database (2 marks)

b. What does the following command do? (4 marks)

    Create table student (regNumber varchar (20), firstName char (10), lastName char (10), phoneNumber varchar (20) default 'none supplies', Primary key (regNumber));

c. With an aid of an appropriate diagram, explain each of the following components of an Entity-Relationship Diagram (ERD) (8 marks)

    i) Entity

    ii) Relationship

    iii) Attribute

QUESTION FIVE [18 MARKS]

a. The figure below shows a filling approach that an educational institution uses to manage its applications. Use it to answer the question that follows.

Explain **Four** advantages that the institution [obtains] from this approach. (8 marks)

b. Outline **Four** types of database threats a Database Administrator is likely to encounter. (4 marks)

c. Discuss any **Three** control measures that a Database Administrator can use to provide security of data in database. (6 marks)