MURANG'A UNIVERSITY COLLEGE

(A constituent college of Jomo Kenyatta University of Agriculture and Technology)

UNIVERSITY EXAMINATIONS 2015/2016

YEAR ONE EXAMINATION FOR THE CERTIFICATE IN INFORMATION
TECHNOLOGY

SCI 0103: DATABASE SYSTEMS

COURSE: CIT   **TIME: 2HRS**
DAY/TIME: Thursday 8:30Am -10:30Am   **DATE: 10th Dec 2015**

INSTRUCTIONS: *Answer question one and any other two questions*

QUESTION ONE (30 MARKS)

a) Define each of the following terms as used in databases   (4 marks)
   - i.   Record
   - ii. Bit
b) Explain **three** phases of database design   (6 marks)
c) Distinguish between a database and database management system.   (4 marks)
d) Describe any **three** data types supported by MS Access   (6 marks)
e) Distinguish between distributed processing and distributed database management system
                                                                     (4 marks)
f) Explain the rules governing the following types of normal forms
   - i.   1NF   (2 marks)
   - ii.   2NF   (2 marks)
   - iii. 3NF   (2 marks)

QUESTION TWO (20 MARKS)

a) Explain **four** problems caused by redundancy in a database   (4 marks)
b) With the aid of a diagram in each case, distinguish between hierarchical and a relational database model.   (6 marks)
c) Describe any **four** properties of relational tables   (8 marks)
d) Differentiate between logical and physical data independence.   (2 marks)

Question Three (20 marks)

a) Alice designed a database and she realized that there was breach of security of the database of the organization. Outline **four** measures that she should have put in place to avoid this breach. (4 marks)

b) With examples explain the following terms used in database system
   i. Entity (2 marks)
   ii. attribute value (2 marks)
   iii. Derived Attribute (2 marks)

c) Distinguish between file based approach and database approach as used in data management (2marks)

d) Outline **four** challenges of installing a database management system (4 marks)

e) Explain **two** characteristics of the Database approach (4 marks)

Question Four (20 marks)

a) Describe **three** disadvantages of using database management system (6 Marks)

b) Discuss any **four** database objects found in Ms access (8 marks)

c) State **two** Properties of primary key (2 marks)

d) Explain **four** action queries (4 marks)