



MURANG'A UNIVERSITY COLLEGE

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

UNIVERSITY EXAMINATIONS 2015/2016

YEAR ONE EXAMINATION FOR THE DIPLOMA IN INFORMATION
TECHNOLOGY

SCI 1103: DATABASE SYSTEMS

COURSE: DIT

DAY/TIME: Thursday 8:30Am -10:30Am

TIME: 2HRS

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)