

**W1-2-60-1-6**

## JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

**UNIVERSITY EXAMINATIONS 2016/2017**

**YEAR 1 SEMESTER 2/YEAR 2 SEMESER 1 EXAMINATIONS FOR THE DIPLOMA IN INFORMATION TECHNOLOGY/BUSINESS INFORMATION TECHNOLOGY**

**DIT 0408: DATABASE MANAGEMENT SYSTEM**

**DATE: JULY 2017 TIME: 1.5 HOURS**

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE (40 MARKS)

a) Given the details below answer the following questions.

Person (driver-id, name, address)

Car (license, model, year)

Accident (report, number, date, location)

The above data represents data of APA insurance Co.

i) Using SQL statements create the above tables adhering to the necessary constraints (6 marks)

ii) Add new accident incident, assume values of your choice (2 marks)

iii) Delete a car whose model is Mazda and license M4456 (4 marks)

iv) Find the total number of cars insured by this company (2 marks)

b) Define the following terms used in database systems (6 marks)

i) Database

ii) DBMS

iii) Database model

c) What is database design? State the three steps a designer must consider before starting the designing process (3 marks)

d) State and explain four database models (8 marks)

e) Differentiate between a primary key and a foreign key (2 marks)

f) Describe the characteristics of a table in second normal form (3 marks)

g) Differentiate between specialization and generalization as used in enhanced ER modeling (4 marks)

QUESTION TWO (15 MARKS)

a) Database management systems have a range of features and capabilities which it must have so as to successfully perform all the duties required of it. State and explain five features commonly offered by a DBMS

(10 marks)

b) Entity relationship diagrams users a standard set of symbols to represent defined data groups and then proceeds to create a relationship between them. Draw any five symbols and explain their significance

(5 marks)

QUESTION THREE (15 MARKS)

a) Compare and contrast the main tasks carried out by the DA and DBA

(5 marks)

b) Explain the purpose of database security (2 marks)

c) How is normalization useful in database design (2 marks)

d) Differentiate the following terms; (6 marks)

i) Strong entity and weak entity

ii) Relation and view

iii) DML and DDL

QUESTION FOUR (15 MARKS)

a) Explain the desirable properties of a transaction (4 marks)

b) Describe the components of a DBMS (3 marks)

c) Discuss the different stages of the database system life cycle (8 marks)

QUESTION FIVE (15 MARKS)

a) Savannah’s family ahs owned and operated a 640 acre growing, Savannah is considering building a database that would make it easier to manage the farm’s activities. She is considering the following requirements for the database;

* For each livestock classification group. (For example cow, horse etc) Savannah keeps track of each animal’s identification number and classification.
* Savannah has recorded the yield of each crop classification group during the last ten years. The records consist of the year, yield, sales. Crop price and amount of money earned.
* Savannah has also recorded the yield of each livestock classification group during the last ten years. The records consist of the following historical data: the year, the (historical) selling price per head, the number of livestock in the end of the year, the number of livestock sold during a one-year period and the total amount of money earned.

Draw an E-R diagram for this application. Specify the key attribute of entity type (10 marks)

b) Briefly explain the following in terms as used in database security

(5 marks)

i) Views

ii) Backup and recovery

iii) Encryption

iv) RAID

v) Integrity