MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.
Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411
Fax: 064-30321
Website: www.must.ac.ke Email: info@must.ac.ke

University Examinations 2013/2014

STAGE V, EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY

DIT 0504: DATABASE PROGRAMMING

DATE: APRIL 2014   **TIME: 1½ HOURS**

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

QUESTION ONE - (30 MARKS)

a) (i) What is a relational database management system?   (1mark)
    (ii) Outline any three disadvantages of relational database.   (3 marks)

b) Describe with examples any two major categories into which SQL statements can be grouped.   (6 marks)

c) Differentiate between:

   i.   Entity and entity set   (2 marks)
   ii. Relationship and relationship set   (2 marks)

d) Construct and draw an E-R diagram for a class-student where a student attends one or more classes. Each class has associated with it zero to any number of recorded students.   (5 marks)

e) Describe three goals of normalization.   (6 marks)

f) Briefly describe five built-in SQL aggregate functions. (5 marks)

QUESTION TWO (15 MARKS)

a) SQL supports a variety of built-in domain types, state and explain at least five of them. (10 marks)

b) Outline the basic steps followed when designing ER Diagrams. (5 marks)

QUESTION THREE (15 MARKS)

a) Suppose that we have a relation marks (student –id,score) and we wish to assign grades to students based on the score as follows:grade F if score < 50, grade C if $50 \leq$ score < 60, grade B if $60 \leq$ score <70, and grade A if $70 \leq$ score . Write SQL queries to do the following;
   i. Create the table and insert at least three records (6 marks)
   ii. Display the grade for each student, based on the marks relation. (5 marks)
   iii. Find the number of students with each grade. (4 marks)

QUESTION FOUR – (15 MARKS)

a) Give two goals of relational Database Management System. (1 mark)

b) Consider the relational database given below. Give an expression in SQL for each of the following queries.

   employee (employee-name,street,city)

   works(employee-name,company-name,salary)

   company (company –name,city)

   manages(employee-name,manager-name)

   i. Create a database and the table with all the attributes, their domains and constraints. (9 marks)

   ii. Insert at least two records (3 marks)

iii.   Delete all tuples in the works relation for employees   (2 marks)

QUESTION FIVE (15 MARKS)

a) Differentiate between composite attribute and key attribute.   (2 marks)

b) State and describe the components of an ER diagram.   (5 marks)

c) List five responsibilities of a database management system. For each
    responsibility, explain the problems that would arise if the responsibility were
    not discharged .   (8 marks)