



EMBU UNIVERSITY COLLEGE
(A CONSTITUENT COLLEGE OF THE UNIVERSITY OF NAIROBI)

TRIMESTER EXAMINATIONS 2013/2014

**FIRST YEAR EXAMINATION FOR THE CERTIFICATE OF COMPUTER AND
PORTABLE DEVICE REPAIR AND MAINTENANCE**

CRM 023: INTRODUCTION TO DATABASES

DATE: AUGUST 13, 2014

TIME: 11.00AM – 1.00PM

INSTRUCTIONS:

Answer Question ONE and ANY Other TWO Questions.

QUESTION ONE

- a) i) What is a DBMS ? (1 mark)
- ii) Give two goals of a DBMS (2 marks)
- b) Differentiate between
- i) Instance of a database and a database schema (2 marks)
- ii) Physical schema and logical schema (2 marks)
- c) Construct and draw an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents (5 marks)

- d) Explain the difference between *a weak and a strong entity set*. (4 marks)
- e) Briefly describe five built-in SQL aggregate functions (5 marks)
- f) Describe the functions of the following tools found in a database management system (DBMS).
 - i.) Data Definition Language (DDL) (3 marks)
 - ii.) Data Manipulation Languages (DML) (3 marks)
 - iii.) Data Dictionary (DD) (3 marks)

QUESTION TWO

SQL supports a variety of built-in *domain types*, state and explain at least 5 of them. (15 marks)

QUESTION THREE

- 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 $score < 40$, grade C if $40 \leq score < 60$, grade B if $60 \leq score < 80$, and grade A if $80 \leq score$. 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

- a) 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)

- b) Modify the database so that Mary now lives in Embu. (3 marks)
- c) Delete all tuples in the works relation for employees of Small Bank Corporation. (2 marks)

- d) Give an SQL schema definition for the employee database of *question 16*. Choose an appropriate domain for each attribute and an appropriate primary key for each relation schema. (10 marks)

QUESTION FIVE

Clearly explain the types of database models. (15 marks)

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