KENYA METHODIST UNIVERSITY

END OF 2ND TRIMESTER 2010 (SCHOOL BASED) EXAMINATIONS

SCHOOL : **SCIENCE & TECHNOLOGY**
DEPARTMENT : **COMPUTER SCIENCE AND BUSINESS INFORMATION**
UNIT CODE : **CISY 221**
UNIT TITLE : **DATABASE MANAGEMENT SYSTEMS**
TIME : **2 HOURS**

Instructions: Answer Question 1 and ANY OTHER TWO questions

SECTION A: COMPULSORY

Question 1 (30 Marks)
a) Define the following terms,
   i)   Database
   ii) Entity
   iii) Key attribute
   iv) Relationship
   v)   Database Schema   (10 Marks)

b) Briefly explain the following concepts in relation to the 3-level ANSI database architecture.
   i)   Data independence
   ii) Abstraction   (4 Marks)

c) Define the terms Data Definition Language and Data Manipulation language in SQL, giving an example SQL command for each type.   (6 Marks)

d) List the any five components that make a database system, giving a brief description of their functions.   (10 Marks)

SECTION B: CHOOSE ANY TWO QUESTIONS FROM THIS SECTION

Question 2 (15 Marks)
a) Distinguish between a database system and a database management system.   (4 Marks)

b) Define data normalization, and give its role in database systems   (3 marks)

c) The following three tables, among others, represent information about employees in an organization.

Employees(**employee_id**, surname, othernames, date_of_birth, date_of_employment, salary, manager_id, manager_name, *dept_no,* dept_name,)

Perform data normalization on the data to the 3rd normal formal (3NF)   (8 marks)

Question 3 (15 Marks)

a) Give two advantages and two disadvantages of the database approach over the traditional file approach.   (4 marks)

b) State and briefly describe the three main database models   (6 marks)

c) A student has a name, date of birth, address, guardian, sex, and class. Write a SQL statement that creates the student table with the listed attributes.   (5 marks)

Question 4 (15 Marks)

a) In a school, every student belongs to a given dormitory, and a given class. A class has a teacher in charge, while a dormitory has a dorm master and a matron. A student can only be in one dorm at any give n time, while a dorm can host many students. Similarly, a student can be in one class at any given time. A student registers for courses, which are taught by different teachers.
Use entity relationship diagram to represent the situation above, giving at least two attributes for each entity.   (10 marks)

b) Briefly describe the following terms as used with databases:
   (i)   Weak entity
   (ii) Cardinality of a relationship
   (iii) Specialization
   (iv) Referential integrity
   (v)   Aggregation   (5 marks)