KENYA METHODIST UNIVERSITY

END OF 2ND TRIMESTER 2010 EXAMINATIONS

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

Instructions:

Answer ALL questions in Section A and any other TWO questions in Section B.

Section A

Question One (30 Marks)

i.   Define the following terms:

      a.   Data model

      b.   Primary candidates

      c.   Attribute   (3 mks)

ii.   Give any three advantages of database systems over traditional file systems.   (3 mks)

iii. Describe the three-schema architecture outlining the different mappings between the schema levels.

(3 mks)

iv.   What is the importance of relationships in database systems? Describe three types of relationships.

(7 mks)

v.   Give the advantages of normalizing tables.   (6 mks)

vi.   How does SQL allow implementation of the entity integrity and referential integrity constraints?

(4 mks)

vii. Describe the major components of a data warehouse.   (4 mks)

Section B (30 Marks)

Question Two (15 Marks)

i. A company consists of a number of departments each having a number of employees each department has a manager who must be on a monthly payroll, other employees are either on a monthly or weekly payroll and are members of the sports club if they so wish. Construct an entity - relationship diagram depicting the scenario.   (9 mks)

ii. Give three advantages of OODBMS.   (3 mks)

iii. Describe the three levels of architecture of a DBMS.   (3 mks)

Question Three (15 Marks)

i. Perform data normalization for the table to 3NF. Showing clearly the results of each stage. (10 mks)

StudentNo	Advisor	AdvRoom	Class1	Class2	Class3
1022	Jones	412	101-07	143-01	159-02
4123	Smith	216	201-01	211-02	214-01

ii. Give five threats that affect databases.   (5 mks)

Question Four (15 Marks)

i. Discuss the main responsibilities of a database administrator.   (3 mks)

ii. Consider the relational database. For each of the following queries, give an expression in SQL:

> **Employee (e-name, street, city)**
> **Works (e-name, company-name, salary)**
> **Company (company-name, city)**
> **Manages (employee-name, manager-name)**

  a. Find the names of all employees who work for First Bank Corporation.
  b. Find the names and cities of residence of all employees who work for First Bank Corporation.
  c. Find the names, street addresses, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000 p.a.
  d. Find the names of all employees in this database who live in the same city and on the same street as do their manager.
  e. Find the names of all employees in this database who live in the same city as the company for which they work.
  f. Find the names of all employees in this database who do not work for First Bank Corporation.
                                                                                                                        (12 mks)