

**KENYA METHODIST UNIVERSITY**  
**1<sup>ST</sup> TRIMESTER 2008 EXAMINATIONS**

**FACULTY** : **SCIENCE AND SOCIAL STUDIES**  
**DEPARTMENT** : **COMPUTER INFORMATION SCIENCE**  
**COURSE CODE** : **MISC 332**  
**COURSE TITLE** : **DATABASE MANAGEMENT SYSTEMS**  
**TIME** : **2 HOURS**

**Instruction:**

- Answer question one and answer two other questions.

**QUESTION ONE (30 MARKS)**

1. SQL is a data sub language, explain the six basic SQL statements used (6Mks)
2. Write SQL statements that could create the following data structure

StudentID*	Name	Advisor	Dept	Faculty	Year	GPA
Mac-1-01-07	Peter	Juma	CIS	Sciences	2007	2.93
Bus-0-07-03	Jane	Abdih	BBA	Business	2008	3.01
Mac-0-02-08	Mary	Henry	CIS	Sciences	2008	3.32
Bus-1-01-06	Andrew	Abdih	BBA	Business	2007	2.79
Mac-1-03-07	John	Juma	CIS	Sciences	2008	3.42

(10Mks)

3. Explain domain and integrity constraints in structured query language (5Mks)
4. Briefly explain the properties of transaction that a DBMS must maintain (4Mks)
5. The following query has been issued against a database

$\pi_{\text{Course\#, CName}} (\sigma_{\text{course.course\# = adopt.course\# AND text.bookID = adopt.bookID AND text.publisher = 'Focus books' AND dept = 'Computer Science'}} (\text{Course X Adopt X Text}))$

Draw a corresponding query tree for this query, explaining the steps you have gone through (5Mks)

**QUESTION TWO (15 MARKS)**

1. Making a data structured relational is achieved by the process of normalization. Normalize the following data structure to its 3<sup>rd</sup> normal form. (6Mks)

<b>Purchases</b>
Customer_name
Customer_address
Customer_country_code
Customer_phone
Product_1_name
Product_1_quantity
Product_2_name
Product_2_quantity
Product_3_name
Product_3_quantity
Total_cost

2. Explain the three levels and mappings in relation to the database architecture (9Mks)

#### QUESTION THREE (15 MARKS)

1. Using a diagram, discuss the database analysis life cycle (12Mks)
2. Showing with diagrams, at least three categories of cardinality of the relationships (3Mks)

#### QUESTION FOUR (15 MARKS)

1. A requirement that a department sponsors project(s) that are monitored by employees who manage the department for a given period of time. Using the following schema, draw an ER model  
Employee(SSN,name,lot)  
Project(pID,start\_on,pbudget)  
Department(dID, dname,budget) (10Mks)
2. Define on data model and what is it comprised of, and give examples of data models (5Mks)

#### QUESTION FIVE (MARKS)

1. Describe the three main relational algebra operations implemented in DBMS (9Mks)
2. Write the relational algebra of the following SQL statement:

```

SELECT    name,DoB,title
FROM      movieStar,StarsIn
WHERE     name=starName AND year=1996 AND gender='F'; (6Mks)

```