THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY (DICT)

EIT 2210: DATABASE MANAGEMENT SYSTEMS II

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2012
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

Answer question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question One (30 marks)

a) Explain the following database concepts in details.
- **i)** Data warehouse
- **ii)** Normalization **(10 marks)**

b) List and explain with the ACID properties. **(4 marks)**

c) What are the basic modeling components of the E-R models. Graphically identify each of them. **(6 marks)**

d) A database is being constructed to keep track of the teams of a basketball league. Each team is identified by its name and it's described by its players and the head coach. Each game is identified by it's number and is described by the location and time. We assume that for each game, the participating teams are specified as a home team and a foreign team. With respect to each game, both the home team and foreign team keep the records of their total scores, the number of rebounds and the member of steals.

- **i)** Draw an ER diagram to represent your schema for the database
- **ii)** Derive a relational database schema for your ER-diagram. **(10 marks)**

SECTION B (Answer Any Two Questions)

Question Two (15 marks)

a) Define the term "unnormalized form" **(1 mark)**

b) Normalize the following relation to the 3NF.

Table: Tbl order 1

Order Id	Customer Id	Items
1	4	Shammers, 3 Screw Drivers, 6Monkey, Wrench
2	23	1 hammer
3	15	2 deloxe garden hose, 2 economy nozzle
4	2	15 10' 2 x 4 untreated pine board
5	23	1 screw driver
6	2	5 keys

(14 marks)

Question Three (15 marks)

a) With the use of an example, describe the "uncommitted data" problem in transaction processing. **(5 marks)**

b) Write the SQL statements for the following descriptions:
- **i)** Create a table Employee with the following fields: emp_num(primary key), emp_fname, emp_lname, job)class, hire date.
- **ii)** Add a new coloum SSNO to the table employee above.
- **iii)** Insert one row of data (an employee) into the employee table.

iv) Show all the employees in the employee table.
v) Remove the employee table and all its data. **(10 marks)**

Question Four (15 marks)

a) Explain **TWO** concurrency control techniques. **(4 marks)**

b) With the use of an example, explain the First Normal Form. **(5 marks)**

c) Explain **THREE** database security control methods. **(6 marks)**

Question Five (15 marks)

a) Make a list of **FIVE** security threats for a bank, for each item on your list, state whether this threat relates to physical security, human security, operating system security or database security. **(5 marks)**

b) The HEG has 12 instructors and can handle up to 30 trainees per class. HEG offers five "advanced technology" courses, each of which may generate several classes. If a class has fewer than 10 trainees in it, it will be cancelled.

It is therefore, possible for a course not to generate any classes during a session. Each class is taught by one instructor. Each instructor may teach up to two classes or may be assigned to do research. Each trainee may take upto two classes per session. Given this information do the following:

i) Draw the E-R diagram for HEG
ii) Describe the relationship between instructor and course in terms of connectivity and cardinality. **(10 marks)**