THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY (DICT 10M)

EIT 2210: DATABASE MANAGEMENT SYSTEM II

END OF SEMESTER EXAMINATIONS

SERIES: DECEMBER 2011

TIME: 2 HOURS

QUESTION ONE 30 MARKS

a) List the ACID properties and explain the usefulness of each.   (4 Marks)

b) Explain three transaction states   (3Marks)

c) With examples, explain any **two** types of attributes.   (4 Marks)

d) Explain **two** components of a data warehouse.   (4 marks)

e) Given the following relation schema Employee (empno, name, age job class, hire date). Write the **SQL** statements of the following phrases

      i.   Update the employee fame to Jim instead of James for employee 118 in an employee table.

      ii.   Insert the 3 rows of data into the Employee table   (6 Marks)

f)   Create an ERD model (showing all the cardinalities), using the following requirements.

-   An INVOICE is written by a SALESREP. Each sales representative can write many invoices, but each invoice is written by a single sales representative.
-   The INVOICE is written for a single CUSTOMER. However, each customer can have many invoices.
-   An INVOICE may include many detail lines (LINE) which describe the products bought by the customer.
-   The product information is stored in a PRODUCT entity.
-   The product's vendor information is found in a VENDOR entity.   (9 Marks)

SECTION B (ANSWER ANY TWO QUESTIONS)

QUESTION TWO (15 MARKS)

a) List and briefly explain the main components of an ER Model.   (3 Marks)

b) With example explain a weak entity.   (4 Marks)

c) Differentiate between relationship degree and relationship cardinality.   (2 Marks)

d) A bank has many branches, and a large number of customers. A customer can open many different kinds of accounts with the bank. The bank keeps track of the customer with his SSN, name, address, and phone number. Age is a factor to check whether he is a major. There are different types of loans, each identified by a loan number. Customer can take out more than one type of loan, and all branches can give loans. Loans have a duration and interest rate. The account holder can enquire about the balance in his account. Draw an ER Diagram for the bank.
                                                      (6 Marks)

QUESTION THREE (15 MARKS)

a) Explain the following terms as used in Normalization
(i) Functional Dependency
(ii) Unnormalized form   (4 Marks)

b) Refer to the table shown below showing sample dentist/patient appointment data.

staffNo	dentistName	patNo	patName	Appointment		surgery No
				Date	Time	
S1011	Tony Smith	P100	Gillian White	12-Sep-04	10.00	S15
S1011	Tony Smith	P105	Jil Bell	12-Sep-04	12.00	S15
S1024	Helen Pearson	P108	Ian Mackey	12-Sep-04	10.00	S10
S1024	Helen Pearson	P108	Ian Mackey	12-Sep-04	14.00	S10
S1032	Robin Plevin	P105	Jil Bell	12-Sep-04	16.00	S15
S1032	Robin Plevin	P110	John Walker	12-Sep-04	18.00	S13

A patient is given appointment at a specific time and date with a dentist allocated at a particular surgery. On each day of patient appointments, a dentist is allocated a specific surgery for that day.

(i) The table above is susceptible to anomalies. Provide examples of insertion, deletion and update anomalies.   (3 Marks)
(ii) Describe the process of normalizing the table to 3NF relations   (8 Marks)

QUESTION FOUR (15 MARKS)

a) Discuss any **three** control measures used to provide security of data in databases.   (6 Marks)

b) Discuss **two** concurrency control measures used in databases.   (4 Marks)

c) Write short notes on Data Warehousing.   (5 Marks)

QUESTION FIVE (15 MARKS)

a) Write SQL statements of the following phrases

i)   Create a table with four attributes, a primary which is not null and a foreign key.

ii)   Change a table's column name.

iii)   List all details of a particular table   (6 Marks)

b) With the help of a diagram, describe the transaction management sub system.   (9 Marks)