TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT M12/EV/FT)

EIS 2203: DATABASE MANAGEMENT SYSTEM

END OF SEMESTER EXAMINATION

SERIES: APRIL 2013
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination

- *Answer Booklet*

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

Question One (Compulsory)

a) Explain the following:
- **(i)** First Normal Form (1NF)
- **(ii)** Second Normal Form (2NF)
- **(iii)** Third Normal Form (3NF)
- **(iv)** Foreign Key
- **(v)** Primary Key **(10 marks)**

b) Distinguish between data and information. **(4 marks)**

c) By mean of suitable examples explain the following:
- **(i)** Functional Dependency
- **(ii)** Determinant **(4 marks)**

d) Explain "Concurrency Control" as applied to Database **(2 marks)**

Question Two

a) Define database management system (DBMS) **(2 marks)**

b) Describe the following database models:
- **(i)** Relational
- **(ii)** Hierarchical
- **(iii)** Object oriented **(8 marks)**

c) Explain the following as related to relational mode:
- **(i)** Attributes
- **(ii)** Domain
- **(iii)** Tuple
- **(iv)** Degree
- **(v)** Cardinality **(5 marks)**

d) List advantages and disadvantages of client/server architecture. **(5 marks)**

Question Three

a) Describe the features of the following database system:
- **(i)** Two-tier system
- **(ii)** Mutli-tier system **(6 marks)**

b) Describe the **THREE** levels of database architecture **(9 marks)**

c) Explain the functions of the following SQL clauses:
- **(i)** Where
- **(ii)** Having
- **(iii)** Group by **(3 marks)**

d) Explain the following SQL predicates:
- **(i)** Distinct
- **(ii)** Top **(2 marks)**

Question Four

a) The table below is sample of dentist/patient appoint data. Use it to answer the questions below:

Staff	Staff Name	Pat No	Patient Name	Appointment Date	Time	Surgery No	Surgery Type	Cost
S011	Kariuki	P100	Jane	12/1/12	10:00	515	Braces	2000
S032	Juma	P105	Fatma	12/1/12	12:00	515	Extraction	800
S024	Said	P108	Atieno	12/1/12	14:00	510	Braces	20000
S011	Kariuki	P006	Owino	14/01/12	8:00	510	Braces	20000
S024	Said	P105	Fatma	18/01/12	16:00	515	Extraction	800
S030	David	P100	Jane	18/01/12	17:00	518	Bleaching	5000

A patient is given appointment at a specific time and date with a dentist allocated for a particular surgery.

(i) Identify all the entries for the appointment system
(ii) Draw E-R diagrams for the system
(iii) Normalize the above relation to 3NF **(20 marks)**

Question Five

a) The table below shows an instance of relation employees. Use it to answer question that follow:

DOB	Employee #	Name	Position	Gender	Salary	Branch #
01/10/65	E001	J. Maingi	Manager	M	60000	B005
10/10/70	E004	Ann Onyango	Assistant	F	54000	B003
12/10/75	E005	Ali Hassan	Supervisor	M	50000	B005
01/01/70	E007	Mary Atieno	Manager	F	55000	B003
01/10/80	E008	S. Owour	Assistant	F	45000	B005
01/01/80	E010	R. Ali	Manager	F	65000	B001

List SQL statements to:

(i) Create the above table
(ii) Add one record to the table

(iii) List all details of female employees who are manager
(iv) List number of employees in each branch
(v) List total salaries earned by staff in each branch
(vi) List Employ# and names of employee who earn salaries between 20,000 and 30,000
(vii) Increase salaries of all managers by 12%
(viii) Delete record of employee E010 because the employee never reported for duty

(16 marks)

b) Briefly explain the following relational algebra operations:
(i) Selection
(ii) Projection
(iii) Union
(iv) Intersection **(4 marks)**