TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT 12S)

EIS 2203: DATABASE MANAGEMENT

END OF SEMESTER EXAMINATION
SERIES: AUGUST 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 **THREE** printed pages

Question One (Compulsory)

a) Distinguish between "data" and "information" **(2 marks)**

b) List the main features of file based system used to store data. **(5 marks)**

c) Explain any **FIVE** advantages of DBMS. **(10 marks**)

d) State **THREE** categories of users of a database system. **(3 marks)**

Question Two

a) Describe any **THREE** components of a database system. **(6 marks)**

b) Explain main characteristics of database technology. **(8 marks)**

c) Distinguish between "user data" and "meta data" **(4 marks)**

d) List any **FOUR** disadvantages of DMS. **(2 marks)**

Question Three

e) Define "Database management system" (DBMS) **(1 mark)**

f) Explain how data indepence is achieved by DBMS **(4 marks)**

g) Describe the ANSI/X3/SPARC database system structure. **(6 marks)**

h) Describe the **THREE** database schemas. **(6 marks)**

i) Define "distributed database" and explain how the distributed database is kept up-to-date. **(3 marks)**

Question Four

a) State the complete format of select statement **(2 marks)**

b) Explain the functions of the following SQL predicates.
- **(i)** Distinct
- **(ii)** Top **(2 marks)**

c) List the stages of database design. **(3 marks)**

d) Define the following terms:
- **(i)** Primary key **(2 marks)**
- **(ii)** Foreign key
- **(iii)** Domain **(3 marks)**

e) Define **TWO** relational database integrity constraints. **(4 marks)**

f) Using a suitable example, describe anomalies that can occur in unnormalized data base. **(6 marks)**

Question Five

a) A relation Emp(EmpNo, Name, Id, Gender, DOB, Dept, Dept#, Location Extension), is used to store employee and department data an instance of the relations shown in table below.

Emp No.	Name	Id	Gender	DoB	Dept	Dept #	Location	Extension
E001	J. Kamau	5520968	M	1/1/1996	Sales	D008	2nd Floor	300
E002	F. Ali	5520967	F	1/1/1998	Sales	D008	2nd Floor	300
E003	M. Owino	415689	F	10/2/1995	IT	D001	1st Floor	100
E010	J. Mwangi	310015	M	5/1/1990	IT	D001	1st Floor	100
E006	A. Abdul	31068	M	1/1/1989	Accounts	D005	3rd Floor	200
E007	Hawa Ali	98651	F	10/10/1988	Accounts	D005	3rd Floor	200

(i) State the primary of the relation Emp **(1 mark)**
(ii) Normalize the relation to 3rd Normal form **(6 marks)**
(iii) State the primary key of the resulting relations after the normalization process. **(2 marks)**
(iv) State the foreign key. **(1 mark)**

b) Consider the relation sale (Emp#, county, sales) representing sales made by employee. An instance of the relation is shown below.

Emp#	County	Sales
E001	Mombasa	85,000
E001	Kilifi	25,000
E002	Kwale	15,000
E002	Mombasa	200,000
E004	Mombasa	28,000
E001	Kwale	28,000

Write SQL statements to:
(i) Create the table above
(ii) Relative all the details from the table, ordering records by Emp#
(iii) Find total sales made by each employee
(iv) Obtain sales for each county
(v) Obtain total sales
(vi) Obtain the highest sale **(10 marks)**