TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY (DICT 14M-EV)

EIS 2202: DATABASE SYSTEM

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
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 (Compulsory)** 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) Explain the following:
- **(i)** Database
- **(ii)** DBMS
- **(iii)** Physical Data Independence
- **(iv)** Logical Data Independence
- **(v)** Database view
- **(vi)** Entity
- **(vii)** Attribute
- **(viii)** Degree of relation **(14 marks)**

b) Describe the following constraints:
- **(i)** Entity integrity
- **(ii)** Referential integrity
- **(iii)** Key constraint **(6 marks)**

Question Two

a) Explain the following database systems:
- **(i)** Distributed
- **(ii)** Centralized
- **(iii)** Client/server **(9 marks)**

b) Discuss the facilities provided by DBMS **(6 marks)**

c) What is meta data? List the data that forms port of meta data **(5 marks)**

Question Three

The table below shows a possible instance of relation "Register". Assume each student is registerd for ONLY ONE COURSE

Student #	Course #	Student Name	Address	Course Name	Course Fees
S001	C001	Alex	Mombasa	Database	8000
S002	C001	Kariuki	Nairobi	Database	8000
S006	C002	Alice	Mombasa	C++	10000
S005	C003	Kamau	Nairobi	Java	9000
S004	C004	Jenifer	Malindi	HTML	7000
S007	C002	Alice	Mombasa	C++	10000

Use the relation register to answer the following:

(i) Identify the primary key **(2 marks)**

(ii) Identify functional dependencies **(2 marks)**

(iii) Using the above relation as an example explain:

a. Insertion anomaly
b. Deletion anomaly
c. Update anomaly **(6 marks)**

(iv) State with reason if the table is 1NF, 2NF, 3NF **(6 marks)**

(v) Normalize the relation to 3rd Normal Form. State the primary keys and foreign key of the resulting tables **(4 marks)**

Question Four

a) Describe the components of a database system **(10 marks)**

b) State any SIX function of database administrator **(6 marks)**

c) State:

(i) Any TWO DDL commands
(ii) Any TWO DML commands **(4 marks)**

Question Five

a) The table below shows a possible instance of relation "staff'

staff

Staff #	Sex	Name	City	Position	Salary
S001	F	Mary	Msa	Manager	80,000
S002	M	John	Nrb	Asst Manager	70,000
S003	F	Helen	Msa	DBA	65,000
S004	M	George	Kisumu	Asst Manager	60,000
S005	M	Owino	Nrb	Prgogrammes	50,000

Use SQL statements to:

(i) List names of all managers who earn more than 75,000
(ii) Retrieve details of all staff in Msa
(iii) List staff and names of female employees in NRBor Kisumu
(iv) List total salary paid to employees in each city
(v) Count number of male and female employees
(vi) Remove the field 'city' from the table
(vii) Insert a new record : S005, F, Alice, NRB, 18,900/= **(16 marks)**

b) Define the following terms:

(i) Tuples
(ii) Schema
(iii) Data view
(iv) Primary key **(4 marks)**