Machakos University College

(A Constituent College of Kenyatta University)
UNIVERSITY EXAMINATIONS 2013/2014
SCHOOL OF COMPUTING AND APPLIED SCIENCE

SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONICS ENGINEERING

EEE 207: DATA BASE MANAGEMENT

DATE: 9TH APRIL, 2014 **TIME:** 8.30 a.m. – 10.30 a.m.

Answer Question ONE

1. (a) Describe each of the following as used in databases. (8 marks)
   (i) Relation;
   (ii) Foreign key;
   (iii) Domain;
   (iv) Derived attribute.

   (b) Explain the advantages of Database Management Systems over manual filing systems. (8 marks)

   (c) Distinguish between database administrator and database designer. (4 marks)

   (d) With the aid of a diagram in each case, describe the following database relationships. (4 marks)
   (i) Many to many

   (ii) One to many.

   (e) Given the following business rules, create the appropriate crow's foot ERDs) (6 marks)

A university college operates many schools; each school has one or more departments. A tutor is assigned to one or more departments in a school. Each tutor may or may not have students in a department. A tutor is only assigned to one school which is headed by a Dean.

Answer ANY TWO questions in this section.

2. (a) What is a recursive relationship? (2 marks)

(b) Distinguish between composite key and composite attribute as used in databases. (4 marks)

(c) Write SQL statements that would be used to create an advert table with the following columns.

Column name	Data type	Size	Null Allowed?
Advert_id	Number	10	No
Newspaper_name	Varchar2	30	No
Property_no	Number	7	No

(i) The primary key is the advert_id. A constraint should be placed on the table to ensure that an advert can only be placed for a property that exists. (8 marks)

(ii) Consider the following relation definition of EMPLOYEE and sample data. Use it to answer the questions that follow.

Empl_ID	Empl_Name	Empl_DOB	Empl_Salary
D1021	Mark	1978	45000
D1022	Jane	1977	44000
D1023	Susy	1979	44000
D1024	Steve	1980	35000
D1025	Tom	1979	37000
D1026	Grace	1981	45000
D1027	Smith	1980	40000

I. Write SQL statement that would list the Empl_ID, Empl_Name and Empl_Salary, for Employees whose Salary is over 40000. (3 marks)

II. The company decided to increase the Empl_Salary by 25%. Write SQL statement that would update the employee's salary. (3 marks)

3. (a) Describe normalization and its role in database design process. (6 marks)

(b) Discuss the **advantages** and **disadvantages** of relational database model.

(14 marks)

4. (a) Explain the following terms as used in database security. (8 marks)
   (i) Authorization;
   (ii) Views;
   (iii) backup and recovery;
   (iv) Integrity.

   (b) Discuss the types of recovery procedures that can be used when a database system fails. (12 marks)