



Mount Kenya

University

UNIVERSITY EXAMINATION 2013/2014

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF INFORMATION TECHNOLOGY

BACHELOR OF BUSINESS INFORMATION TECHNOLOGY

EVENING

UNIT CODE: BIT 2102

UNIT TITLE: DATABASE SYSTEMS

DATE: DECEMBER 2013

MAIN EXAM

TIME: 2 HOURS

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO

BIT 2102: DATABASE SYSTEMS DESIGN AND MANAGEMENT special exam

Question 1

- a. Differentiate between Conceptual, Logical and Physical Database Design (6 Marks)
- b. Discuss why a data dictionary is important in a DBMS (4 Marks)
- c. Discuss why backup is important in database (11 marks)
- d. Explain the following database models (9 Marks)
 - i. Relational Model
 - ii. Object- Oriented
 - iii. Network Model

Question 2

- a. Explain the ANSI/X3/SPARC Database systems Architecture. (10 Marks)
- b. Discuss the phases in the Database Development Life Cycle. (10 Marks)

Question 3

- a. Explain the following in detail. (10 Marks)
 - i. Data Definition Language (DDL)
 - ii. Data Manipulation language (DML)

- b. Differentiate between the Database approach and the file approach outlining all the advantages and disadvantages of each approach. (10Marks)

Question 4

- a. Table Name: Student
- i. Write SQL statement to CREATE a database table. (6 Marks)
 - ii. Write SQL statement to DELETE a record. (2 Marks)
 - iii. Write SQL statement to UPDATE a record (2 Marks)
 - iv. Write SQL statement to CREATE a database named MKU_DB. (4 Marks)
- b. Explain the following. (6 Marks)
- i. First Normal Form (1NF)
 - ii. Second Normal Form (2NF)
 - iii. Third Normal Form (3NF)

Question 5

- a. Define the following terms (6 Marks)
- i. Entity
 - ii. Distributed Database
 - iii. DBMS
- b. Construct an Entity Model for the Transport Database case given below. Indicate the various entities, attributes and relationships.(14 Marks)

CASE: PERSONNEL DATABASE SYSTEM

A large Company with an established personnel department requires a personnel system to help it manage its employee data. Whenever new employees are hired data about their details are captured into the system. The Company recognizes up to four dependants. During the period of employment, employees may be trained at the Company's training school. A medical scheme exists whereby employees and their dependents spend and later claim for refund subject to a limit depending on the grade of the employee. A medical claim must provide information about the medical practitioner's name and address, date of consultation, diagnosis, medication prescribed and its corresponding cost. It must also be indicated on which member of the family was attended to. The Company only recognizes only the approved.