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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY
KBI 2203 – DATABASE MANAGEMENT

Date: 11TH December 2023
Time: 8:30AM – 10:30AM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) The following terms as used in databases, give the differences:
- i) Data and information
 - ii) Database and DBMS (4 Marks)
- b) A file processing system has a lot of challenges when it comes to management of the data. State and explain three major challenges associated with file management systems (6 Marks)
- c) State four problems database administrators encounter as a result of data redundancy in their role in database management. (4 Marks)
- d) Give the role of the following actors in a database.
- i) Database Administrator
 - ii) Database Designer
 - iii) Database Analyst (6 Marks)
- e) Describe the activities performed during the following phases of database design and development process.
- i) Physical database design
 - ii) Logical database design
 - iii) Conceptual database design (6 Marks)
- f) Define the term Normalization, and explain its significance in database design and development (4 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss the following database languages.
- i) Data Definition language (DDL)
 - ii) Data Manipulation Language (DML)
 - iii) Data Control Language (DCL) (6 Marks)
- b) Discuss the following database normalization levels.
- i) 1st Normal Form
 - ii) 2nd Normal Form
 - iii) 3rd Normal Form (6 Marks)
- c) Describe any four advantages offered by database management systems over traditional file based systems. (8 Marks)

QUESTIONS THREE (20 MARKS)

- a) Explain the function of each of the clauses in an SQL statement.
 - i) WHERE
 - ii) SELECT
 - iii) HAVING
 - iv) GROUP BY
 - v) ORDER BY

(5 Marks)
- b) Study the following database table that stores student’s records and answer the questions that follows.

TABLE: STUDENTS

| AdmNo | Fname | Lname | Course | PhoneNo | DOB |
|--------------|---------|-------|------------|------------|------------|
| BIT/001/2023 | Eunice | Weru | IT | 0722000001 | 13 /6/2004 |
| KMA/002/2023 | Anitah | James | Math | 0722000002 | 15 /7/2003 |
| KCS/002/2023 | Mourine | Were | Comp. Sci. | 0722000003 | 16 /8/2003 |
| BIT/004/2023 | Joyline | Kioko | IT | 0722000004 | 13 /6/2004 |

Write SQL statements to perform the following

- i) Display all the students where the results will only contain the first three columns in the table (2 Marks)
- ii) To produce the Fname and Lname combined as StudentName. (2 Marks)
- iii) To display the full name and age of each student. (4 Marks)
- iv) To produce the total number of students per course. (4 Marks)
- v) Change the last name of student with **AdmNo BIT/002/2023** to **Moses** (3 Marks)

QUESTION FOUR (20 MARKS)

- a) A TV company wishes to develop a database to store data about the TV series that the company produces. The data includes information about actors who play in the series, and directors who direct the episodes of the series. Actors and directors are employed by the company. A TV series are divided into episodes. Each episode may be transmitted at several occasions. An actor is hired to participate in a series, but may participate in many series. Each episode of a series is directed by one of the directors, but different episodes may be directed by different directors.
 - i) Identify all the entities in the above scenario. (4 Marks)
 - ii) Draw the Entity relationships diagram to illustrate the relationship between the identified entities. (6 Marks)
 - iii) Draw a table diagram for each entity that includes at least three attributes and indicate the primary key attribute. (8 Marks)
 - iv) Explain primary and foreign keys and give examples to illustrate. (2 Marks)

QUESTION FIVE (20 MARKS)

KM AutoCare is a small auto service business with two locations in a Thika town. The business is based on providing routine maintenance at fixed cost to car owners. The owners have decided to computerize their operations to allow them to better track their business. Data to be gathered for each service visit includes service ID, service item, service item cost, vehicle owner, owner telephone number, vehicle make and model, vehicle year, and date of service.

- a) Create an ERD for the auto service system. (8 Marks)
- b) Create 3NF table designs for the system. (6 Marks)
- c) Use sample data to populate the fields for three records. (6 Marks)