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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE DIPLOMA IN BUSINESS & INFORMATION TECHNOLOGY
DIT 1007 – DATABASE MANAGEMENT SYSTEMS

Date: 18TH April 2024
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)
a) Describe two key words that are used in Data Definition Language   (4 Marks)
b) Differentiate between Database and Database management systems   (4 Marks)
c) With the use of a diagram, explain the three-layer data architecture.   (6 Marks)
d) Below is a list of potential entities for a Kiriri University database;
  – Student
  – Lecturer
  – Courses
  Draw an ERD diagram showing all possible attributes together with Primary Key.   (6 Marks)
e) Describe any four disadvantages of the file-based systems.   (4 Marks)
f) Write an SQL statement that will perform the following:
  i)   Create a database named *DIT*   (2 Marks)
  ii) Create and insert data in two tables named *Computer Science* and *IT*   (4 Marks)

QUESTION TWO (20 MARKS)
a) With the aid of illustrations, differentiate between relational databases and entity relationship databases.   (8 Marks)
b) Discuss the term schema with an illustration   (3 Marks)
c) Explain the three types of schemas with illustrations.   (9 Marks)

QUESTION THREE (20 MARKS)
a) Discuss the main characteristics of database approach and how it defers from traditional file system.   (8 Marks)
b) With the aid of a diagram, explain the components of a database management system.   (8 Marks)
c) Write an SQL statement that is used to retrieve all the female workers in a database called "Human Resource".   (6 Marks)

QUESTION FOUR (20 MARKS)
a) Describe briefly the hierarchical data model and object-oriented data model of databases   (8 Marks)
b) Define the term "database normalization"   (2 Marks)
c) Summarize the four anomalies that may occur in a database   (4 Marks)
d) Let's assume, a school can store the data of teachers and the subjects they teach. In a school, a teacher can teach more than one subject. The table shown in figure below is susceptible to update anomalies. Convert the given table into 2NF.   (6 Marks)

Teacher Table

TEACHER_ID	SUBJECT	TEACHER_AGE
25	Chemistry	30
25	Biology	30
47	English	35
83	Math	38
83	Computer	38

QUESTION FIVE (20 MARKS)

a) Give an SQL statement to create a database named "school" that has a table called "Department"
(6 Marks)

b) Draw an E-R diagram that shows the hospital environment, theatres, patients (in and out-patients) doctors, nurses, wards and ward beds (8 Marks)

c) Explain the four types of relationships in database management systems. (6 Marks)