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

Date: 8TH AUGUST 2024
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- Write a SQL Code that will create a table called persons with the fields ID, LastName, FirstName and Age with the ID as the primary key. (6 Marks)
- Define the term Foreign Key as used in Databases (2 Marks)
- Construct an E-R model for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. (6 Marks)
- Differentiate between the Database schema and database model (4 Marks)
- Explain TWO types of attributes that can be used when developing an ER diagram. (2 Marks)
- Describe Four User-friendly Interfaces that the Database Management System provides (4 Marks)
- Imagine we're building a restaurant management application. That application needs to store data about the company's employees and it starts by creating the following table of employees:

EMPLOYEE_ID	NAME	JOB_CODE	JOB	STATE_CODE	HOME_STATE
E001	Alice	J01	Chef	26	Michigan
E001	Alice	J02	Waiter	26	Michigan
E002	Bob	J02	Waiter	56	Wyoming
E002	Bob	J03	Bartender	56	Wyoming
E003	Alice	J01	Chef	56	Wyoming

Normalize the table above to the Second Normal Form (2NF) (6 Marks)

QUESTION TWO (20 MARKS)

- Outline FOUR cardinalities of relationship expressing why it is important to undertake cardinality of relationship in databases (8 Marks)
- Briefly describe the roles of the following people in client/ server database.
 - Database Designer
 - Naïve User(4 Marks)
- With the aid of a diagram, illustrate the stages of developing a database system. (8 Marks)

QUESTION THREE (20 MARKS)

- a) With the use of illustrations, demonstrate the components of the Database System environment (8 Marks)
- b) You have been allowed to work as an attaché in a microfinance organization. After some time, you realize the system used in the organization is a file-based system. Explain five reasons why you would advise the manager to change to a DBMS as opposed to the file-based system (10 Marks)
- c) Explain why a three-tier database systems architecture is preferable to a two-tier (2 Marks)

QUESTION FOUR (20 MARKS)

- a) Write the assertion for the following statement. (6 Marks)
"The sum of all loan amounts for each branch must be less than the sum of all account balances at the branch."
- b) Discuss the two constraints of ER model (6 Marks)
- c) Below is information provided by a college to aid in developing their database, use it to answer the questions below:
- A college contains many departments
 - Each department can offer any number of courses
 - Many instructors can work in a department
 - An instructor can work only in one department
 - For each department there is a Head
 - An instructor can be head of only one department
 - Each instructor can take any number of courses
 - A course can be taken by only one instructor
 - A student can enroll for any number of courses
 - Each course can have any number of students
- i) Draw an ER diagram of the above information, (6 Marks)
- ii) Add cardinality of the relationships to the ER diagram above (2 Marks)

QUESTION FIVE (20 MARKS)

- a) Write SQL Query that will display the E-ID, Ename and City only from the employee table of a database. (4 Marks)
- b) Discuss the three types of DBMS architecture. (6 Marks)
- c) Describe Eight features of Database Management Systems (6 Marks)
- d) You have been called upon to develop strategies for database security as an expert DBA. Demonstrate FOUR functions you will execute as the DbA expert. (6 Marks)