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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
DIT 1007 - DATABASE MANAGEMENT SYSTEMS

Date: 5TH DECEMBER 2022
Time: 2:30pm – 4:30pm

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Construct an E-R model for a car insurance company whose customer own one or more cars each. Each car has associated with it zero to any number of recorded accidents. (6 Marks)
- b) Define the following terms: (6 Marks)
 - (i) Data
 - (ii) Database
 - (iii) DBMS
- c) Explain Data Independence as used in Databases highlighting its two levels (6 Marks)
- d) Kiriri University used to use a file-based approach in its operations . outline four limitations of this approach. (4 Marks)
- e) With the aid of a diagram, describe the client-server database architecture. (6 Marks)
- f) Explain the term Prime Attribute as used in databases. (4 Marks)

QUESTION TWO (20 MARKS)

- a) Explain the components of Database System. (8 Marks)
- b) Differentiate between an instance and a schema. (4 Marks)
- c) Discuss the Two-Tier and Three-Tier Architecture of DBMS with the use of diagrams. (8 Marks)

QUESTION THREE (20 MARKS)

- a) A university has many departments. Each department may have full-time and part time students. Each department may float multiple courses for its own students. Each department has staff members who may be full time and part time. Design a generalization, specialization hierarchy for the university. (8 Marks)
- b) Distinguish between degree and cardinality as used in relational databases (4 Marks)
- c) Explain the term **functional dependency** (2 Marks)
- d) Consider the following scheme for PROJECT database (6 Marks)

Project (Project-no, Project-name, Project-manager)

Employee (Employee-no, Employee-name)

Assigned to (Project-no, Employee-no)

Write SQL-DDL statement for PROJECT database.

The SQL statement should clearly indicate the primary key and foreign keys.

QUESTION FOUR (20 MARKS)

- a) Outline four properties of a relation in First Normal Form (1NF) (6 Marks)
- b) Discuss any three datatypes used in a database table (6 Marks)
- c) The relational schema faces several undesirable problems, discuss four main ones. (8 Marks)

QUESTION FIVE (20 MARKS)

- a) With the aid of an SQL statement in each case, explain the following commands. (6 Marks)
 - i) Insert
 - ii) Select
 - iii) Update
- b) The table below shows data in an unnormalized form. Use it to answer the question that follows. (8 Marks)

Movie- Title	Year	Type	Director	Director_DOB	Yr_releases_cnt	Actors
Notting	1999	Romantic	Rogers M.	05/06/1956	30	Hugh G Rhys
Lagaan	2000	Drama	Ashutosh G.	15/02/1968	50	Aamir K Gracy S

Normalize the table to 2NF

- c) State any four types of functional Dependency (4 Marks)
- d) State the two integrity constraints among most database applications (2 Marks)