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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE CERTIFICATE IN INFORMATION TECHNOLOGY
CIT 1007: INTRODUCTION TO DATABASES

Date: 15TH APRIL 2024
Time: 11:30AM-1:30PM

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

QUESTION ONE (30 MARKS)

a) Relationships are associations that exist between entities. Explain the following relationships with the help of diagrams where possible.
   i) 1:N (2 Marks)
   ii) M:N (2 Marks)
   iii) 1:1 (2 Marks)

b) Differentiate between the following two types of Database models and in each model state two advantages of using them.
   i) Relational Database model (3 Marks)
   ii) Hierarchical Database model (3 Marks)

c) A database system is much more than a database or a DBMS. State and explain three major components of a database system. (6 Marks)

d) Data storage is built around a corresponding application that uses diagrammatic representation of convectional file systems. Discuss any four disadvantages of a file. (6 Marks)

e) Discuss three limitations of object oriented data model in database development (6 Marks)

QUESTION TWO (20 MARKS)

a) Users are part of the components of a database system and they are categorized differently. Explain the three different categories of database users. (6 Marks)

b) Describe four contents of a database which helps in data integration and data sharing on multi- user systems. (8 Marks)

c) Data model is a collection of descriptions of data structures. State and explain how the three main categories of Models work. (6 Marks)

QUESTION THREE (20 MARKS)

a) DBMS allow users to create, manipulate and control access to a database. State and explain the four functions of a Database Management System (DBMS). (8 Marks)

b) A data model is a comprehensive scheme for presenting how data is to be represented for manipulations by computer programs. Using examples, discus network database model. (6 Marks)

c) A Database Management System is made up of different Components. List and explain the software component of a DBMS. (8 Marks)

QUESTION FOUR (20 MARKS)

a) Define the following terms as used in database management; (6 Marks)
   i) A file
   ii) Indexes
   iii) Meta data

b) An E-R diagram naturally consists of a collection of entity sets and relationship sets. Using the E-R model approach to database design, discuss the database design process. (8 Marks)

c) Discus the main tasks associated with conceptual, logical and physical database design. (8 Marks)

QUESTION FIVE (20 MARKS)

a) Discuss the history behind database systems and explain the future trends. (8 Marks)

b) Discuss Object Oriented Data Model and state two advantages from the use of this model. (8 Marks)

c) A database system is more than a file. Discuss three disadvantages of a database system. (6 Marks)