KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FOR THE CERTIFICATE IN INFORMATION TECHNOLOGY
CIT 1007- INTRODUCTION TO DATABASES

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) Distinguish between knowledge and information (4 Marks)

b) Explain two functions of a database management system (4 Marks)

c) State four types of keys that can be used in a relation. (4 Marks)

d) Explain the following concepts in relation to databases (4 Marks)
   i) Data bank
   ii) DBMS

e) Briefly describe three reasons for normalizing a database (6 Marks)

f) Draw an E-R Diagram for Ruiru Hospital that captures the following entities: Patients.

   Doctors, Assistants and Wards. (5 Marks)

g) State three database management systems. (3 Marks)

QUESTION TWO (20 MARKS

a) Jack wants to design tables to be used in a given database. Explain three types of entity
   Relationships that he can use in the design. (6 Marks)

b) Models are used to represent the architecture of various systems. Discuss four types of database
   models that can be implemented in database design. (8 Marks)

c) State six advantages of a computerized database over the traditional file system. (6 Marks)

QUESTION THREE (20 MARKS

a) Describe the functions of the following tools found in a database management system
   (DBMS).

   i) Data Definition Language (DDL) (2 Marks)
   ii) Data Manipulation Languages (DML) (2 Marks)
   iii) Data Dictionary (DD) (2 Marks)

b)   James wants to design a database for a given set up. Discuss all the steps in the database

       Design cycle that he is supposed to follow.   (6 Marks)

c)   State four qualities of a good database design.   (4 Marks)

d)   Identify and describe three major shortcomings of the conventional file structures that are being
       addressed by the database approach.   (6 Marks)

QUESTION FOUR (20 MARKS

a)   Describe the five components of the DBMS environment and discuss how they relate to each
       other.   (10 Marks)

b)   Distinguish between the logical and physical database schema   (4 Marks)

c)   A database administrator is supposed to protect the database from various threats. Advise him on

       three methods he can use to perform this task.   (6 Marks)

QUESTION FIVE (20 MARKS

a)   Explain four benefits of database normalization.   (8 Marks)

b)   Discuss three types of relationships that can be implemented in databases using well

       Labelled diagrams.   (6 Marks)

c)   Explain three factors that affect the selection of a database management system.   (6Marks)