KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN BIOMETRY AND INFORMATICS
FIRST SEMESTER 2022/2023
[SEPTEMBER-DECEMBER, 2022]

COMP 401: DATABASE MANAGEMENT SYSTEMS

STREAM: Y4S1 **TIME: 2 HOURS**

DAY: THURSDAY, 9:00 – 11:00 AM **DATE: 22/12/2022**

INSTRUCTIONS

1. Do not write anything on this question paper.
2. Answer question ONE and any other TWO questions.

QUESTION ONE

a) Differentiate the following terminologies
   i. Database schema and a database instance [2 Marks]
   ii. Generalization and Specialization [2 Marks]
b) List and Explain the DBMS languages [6 Marks]
c) Explain the types of File Organization used to organize file records [8 Marks]
d) Discuss codd's rules on relational model [12 Marks]

QUESTION TWO

a) Write SQL commands to execute the following statements; [5 Marks]
   i. Create a database by name students
   ii. Create a table by name performance
   iii. Delete a table by name performance
   iv. Identify a column for author from a table books where the age is greater than 50
b) Explain any five components of a database [5 Marks]

c) With a clear illustration, discuss the application of hierarchical data model [10 Marks]

QUESTION THREE

a) Explain the role of an entity and its attributes in relation to databases [4 Marks]

b) Identify the and explain the major steps of the database design (data modeling) process [6 Marks]

c) Discuss the E-R Model as opposed to network data model [10 Marks]

QUESTION FOUR

a) Discuss the functions of a Database management system [5 Marks]

a) With clear illustration, explain the role of cardinalities in databases [5 marks]

b) With relevant example, describe the application of a relational data model [10 Marks]

QUESTION FIVE

a) Distinguish between Database and a Database Management System [2 Marks]

b) List and explain the key categories of storage devices [3 Marks]

c) With clear illustration, explain the role of physical data independence and logical data independence [6 Marks]

d) Discuss the major types of database constraints [9 Marks]