



KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS
YEAR TWO SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE IN
COMPUTER SCIENCE**

**COURSE CODE : CSC 310
COURSE TITLE : DATABASE SYSTEMS**

DATE: 15/02/2021 TIME: 08.00 A.M – 10.00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

- a) What is a database (2 marks).
- b) Differentiate among the first, second and third normal forms of a database system (6marks)
- c) What are components of a database management system (4 marks)
- d) What is the difference between MS access and large commercial data bases(6 marks)
- e) Outline any four advantages for the database approach (4 marks)
- f) What are some disadvantages of DBMS (4 marks)
- g) State some of file based systems (4marks)

QUESTION TWO [20 MARKS]

- a) Using a suitable diagram, describe types of database models (10 marks)
- b) Discuss the various database languages giving an example of each (10 marks)

QUESTION THREE [20 MARKS]

- a) State and explain types of anomalies found in a database that is not normalized[6 Marks]
- b) Write a single sentence with a basic example (based on any relation) to define and illustrate the following relational concepts. (5 marks)
 - (i) Candidate Key
 - (ii) Alternate Key
 - (iii) Atomic Key
 - (iv) Composite Key
 - (v) Primary Key.
- c) Define entity. (2 marks)
- d) Using a suitable diagram, differentiate between composite and multivalued entities (7 marks)

QUESTION FOUR [20 MARKS]

- a) A foundation dealing with regulation of publication of books maintains a database consisting of 3 related tables whose structure is as shown below:
 - Book(bookCode, bookTitle, authorCode, pubCode dateOfPub)
 - Author(authorCode, authorName, authorCountry, authorContacts)
 - Publisher(pubCode, pubName, pubCountry, pubContacts)

Write down an SQL state to:

- (i) Create the Author and Book table [2 mk]
 - (ii) Change the contacts of the publisher whose code in pub12, to 12299 [2mk]
 - (iii) Insert a record into the authors table (use appropriate values) [2mk]
 - (iv) List the total number books [2mk]
 - (v) Display the titles of all books authored by Joseph Paul, [2mks]
 - (vi) Display the name of the author of the book Database Management, [2mks]
 - (vii) Display the titles of all books as well as the names of their authors and the names of their authors. Ensure that books of the same author are listed together in a group. [2mk]
 - (viii) List the names of the publishers who have published books authored by CJ Date, [2mks]
- b) Distinguish between a logical and physical data independence. [4mks]

QUESTION FIVE [20 MARKS]

a) Consider the table structure below.

TABLE STUDENT:

STUDNO	LNAME	FNAME	INITIAL	DOB	UNIT CODE
101	Mwangi	John	N	11/8/80	2100
102	Kimaiyo	Peter	M	12/12/84	2200
103	Chebet	Martha	K	2/4/83	2305
104	Oduor	Louis	M	11/06/80	2200
105	Njuguna	Frank	G	15/9/85	2100

Using SQL,

- i. Having created the table structure in (i) above, enter the first two records into the table. [2 Marks]
 - ii. Return the names of students taking unit code 9945 [2 Marks]
 - iii. Remove the table STUDENT from the database [2 Marks]
 - iv. Order the table by unit code in ascending [2 Marks]
- b) Hence explain the usage of these clauses: JOIN and CALCULATE [4 Marks]
- c) Describe the following terms. [5Marks]
- i) Cardinality
 - ii) Relationship