



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN
INFORMATION SYTEMS**

4TH YEAR 1ST SEMESTER 2022/2023 ACADEMIC YEAR

MAIN CAMPUS

COURSE CODE: ITB 2401

COURSE TITLE: DATABASE APPLICATION

EXAM VENUE: LAB 13

STREAM: BIS

DATE: 6/1/25

EXAM SESSION: 9-11.00 AM

TIME: 2.00 HOURS

INSTRUCTIONS:

- 1. Answer Question 1 (Compulsory) and ANY other two questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION ONE

(30 Marks)

1. Data and information are essentially the same thing.

A. True B. False

2. Data processing can be as simple as organizing data to reveal patterns.

A. True B. False

3. Data is the result of processing raw facts to reveal its meaning.

A. True B. False

4. When data are entered into a form and saved, they are placed in the underlying database as knowledge.

A. True B. False

5. Data constitute the building blocks of information.

A. True B. False

6. Metadata describes the data characteristics and the set of relationships that links the data found within the database.

A. True B. False

7. The only way to access the data in a database is through the DBMS.

A. True B. False

8. Database programming languages receive all application requests and translate them into the complex operations required to fulfil those requests.

A. True B. False

9. The DBMS reveals much of the database's internal complexity to the application programs and users.

A. True B. False

10. One disadvantage of the DBMS is that it increases the risk of data security breaches.

A. True B. False

An operational database is sometimes referred to as an enterprise database.

A. True B. False

12. A data warehouse can store data derived from many sources.

A. True B. False

13. The same data might be simultaneously structured and unstructured depending on the intended processing.

A. True B. False

14. Corporations use only structured data.

A. True B. False

15. Field refers to a collection of related records.

A. True B. False

16.....is one reason for problems of data integrity.

- 17.....is the process of organizing data into related tables.
- 18..... is used to control privilege in Database.
- 19.....keyword sorts the record in ascending order by default.
- 20.....allows a unique number to be generated when a new record is inserted into a table.
- 21.....is used to save permanently any transaction into database
- 22..... is a bottom-up approach in which two lower level entities combine to form a higher level entity.
- 23.....are used to temporarily rename a table or heading of a column.
24. 4NF stands for
- 25 A contains the smallest unit of meaningful data, so you might call it the basic building block for a data file.
- 26 A collection of conceptual tools for describing data, relationships, semantics and constraints is referred to as
- 27 A collection of operations that performs a single logic function is called.....
- 28 A Foreign key in one table points to a key in another table.
- 29 A relation between two entities is treated as a single entity is called.....
- 30 A relational database developer refers to a record as.....

QUESTION TWO

(20 Marks)

- a) Define Distributed Database Systems (DDBs) and hence explain any THREE benefits of DDBs. (8 Marks)
- b) Describe the basic steps of Data Governance. (8 Marks)
- c) Highlight any TWO common security concerns in database applications, and explain how can they be addressed. (4 Marks)

QUESTION THREE

- a) Parallel database systems consist of multiple processors and multiple disks connected by a fast interconnection network, which can pose some performance issues. Explain TWO performance measures used in parallel database systems. (4 Marks)

b) Explain THREE ways to access Database data from within a host language application. (6 Marks)

c) Explain any FIVE differences between ODBC and JDBC (10 Marks)

QUESTION FOUR

a) Compare and contrast relational databases with NoSQL databases. Provide examples of scenarios where a NoSQL database might be more appropriate than a traditional relational database.

(8 Marks)

b) Define data warehousing and explain its role in business intelligence. Describe TWO key features of a data warehouse and how they contribute to decision-making in an organization. (6 Marks)

c) Explain the procedure of creating a form and a macro in MS Access databases application.

(6 Marks)

QUESTION FIVE

a) Assume your Cadet Brigade Commander discusses the possibility of transforming the dossier from a file-based application to a database management system. Knowing you have taken the Data Management course, he expresses his concerns to you regarding the transition to database management systems. Give any FOUR valid points that can convince him that it is okay to switch to a database management system. (8 Marks)

b) Evaluate any THREE ancient data management techniques (6 Marks)

c) Discuss the 3 V's of Big data (6 Marks)