

**W1-2-60-1-6**

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

# **UNIVERSITY EXAMINATIONS 2017/2018**

EXAMINATION FOR THE DIPLOMA IN INFORMATION TECHNOLOGY

**BIT 2304: DATABASE MANAGEMENT SYSTEMS**

**DATE: JANUARY 2018 TIME: 1.30 HOURS**

**INSTRUCTIONS:**

**ANSWER QUESTION ONE [COMPULSORY] AND ANY OTHER TWO QUESTIONS**

**==========================================================**

**QUESTION ONE [30 MARKS]**

1. Distinguish between a “left outer join” and a “Right outer join”. [6 marks]
2. Differentiate between a homogeneous and a heterogeneous distribution database system [6 marks]
3. When a database is not normalized, some anomalies may arise. Describe using an example 3 such anomalies. [6 marks]
4. Explain 3 techniques of enforcing the integrity of a database [6 marks]
5. Illustrate how a data warehouse differ in function, content and structure from an OLTP database. [6 marks]

**QUESTION TWO [20 MARKS]**

1. Describe each of the following in the context of database security
2. Confidentiality [3 marks]
3. Integrity [3 marks]
4. Availability [3 marks]
5. Explain how each of the following mechanisms contribute to providing security for a database
6. Authorization [3 marks]
7. Authentication [3 marks]
8. Back up [2 marks]
9. Recovery [3 marks]

**QUESTION THREE [20 MARKS]**

1. Describe with the aid of examples, how each of the following techniques extends the sage and functionality of SQL
2. Stored procedures [5 marks]
3. Triggers [5 marks]
4. Views [5 marks]
5. Embedding SQL in a programming language such as Java/DHe/ASP [5 marks]

**QUESTION FOUR [20 MARKS]**

Using your own suitable example/diagrams, explain the following transaction

processing concepts

1. ACID principles, [5 marks]
2. Schedules, serializability and isolation [5 marks]
3. Commit, Roll back, save point, [5 marks]
4. Locking [5 marks]

**QUESTION FIVE [20 MARKS]**

1. Explain the problems associated with a directing a true distribution database in practice [8 marks]
2. A university has 2 satellite campuses in addition to the main campus. Describe 3 ways the university can distribute its students data across the 3 sites. Comment on the pros and cons of each option. [12 marks]