



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL INFORMATICS AND INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DIPLOMA IN LINUX ENGINEERING**  
**1<sup>ST</sup> YEAR 1<sup>ST</sup> SEMESTER 2018/2019 ACADEMIC YEAR**  
**KISUMU CAMPUS**

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**COURSE CODE: ICT 2114**

**COURSE TITLE: INTRODUCTION TO MYSQL DATABASE SYSTEM**

**EXAM VENUE:**

**STREAM: Dip. Linux Engineering**

**DATE:**

**EXAM SESSION:**

**TIME: 1 ½ HOURS**

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**Instructions:**

- 1. Answer question 1 (Compulsory) and ANY other 2 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)**

- a) Define the following terms; (4 marks)
  - i. Data
  - ii. Database
  - iii. Database Management System (DBMS)
  - iv. SQL
- b) Differentiate between a primary key and a composite key (4 marks)
- c) Differentiate between MySQL and NoSQL (4 marks)
- d) Give four attributes of a foreign key (4 marks)
- e) Define the following (4 marks)
  - i. Unions
  - ii. Joins
  - iii. Views
  - iv. indexes
- f) List five examples of RDBMS programs (5 marks)
- g) What is PHP (1 marks)
- h) Give two database security threats and how to mitigate them (4 marks)

### **QUESTION TWO 20 MARKS**

- a) What do you understand by the term database design (2 marks)?
- b) Using an illustration explain the stages in database development lifecycle (18 marks)

### **QUESTION THREE 20 MARKS**

- a) Define the following terms (4 marks)
  - i. Entity
  - ii. Entity Relationship Modelling
- b) Explain the importance of Entity Relationship Modelling (6 Marks)
- c) List two major characteristics of Entities (2 marks)
- d) Describe four major types of DBMS (8 marks)

### **QUESTION FOUR 20 MARKS**

- a) What is Normalization? (2 marks)
- b) Using a simple table illustrate the Normalization process from 1NF to 3NF (8 marks)
- c) What is a foreign key (2 marks)
- d) Explain four features that simplify the process of MySQL server administration (8 marks)

### QUESTION FIVE 20 MARKS

- a) Select statement is the most frequently used SQL command. Explain the following select statement general syntax; (10 marks)

```
SELECT [DISTINCT|ALL ] { * | [fieldExpression [AS newName]] } FROM tableName  
[alias] [WHERE condition][GROUP BY fieldName(s)] [HAVING condition] ORDER  
BY fieldName(s)
```

- b) What are functions (2 marks)  
c) Give six arithmetic operators used in numeric functions (6 marks)  
d) List two uses of functions in SQL (2 marks)