JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION ARTS

2ND YEAR 2ND SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS

INSTITUTIONAL BASED

COURSE CODE: SCS 212

COURSE TITLE: DATABASE SYSTEMS

EXAM VENUE: **STREAM: BEd. Arts**

DATE: **EXAM SESSION:**

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 [COMPULSORY]

a) Define the following concepts with respect to Database Systems;

i) Database (2 Marks)

ii) File Based System (2 Marks)

iii) Query (2 Marks)

b) Explain the components of Database Management System (DBMS). (10 Marks)

c) Outline six steps you would follow to design and create a good Database. (6 Marks)

d) Define the following sub-divisions of the relational data model;

i) Tuple (1Mark)

ii) Cardinality (1Mark)

iii) Relation (1Mark)

iv) Relationship (1Mark)

e) Identify and briefly discuss the ACID properties of a typical Database Transaction (4 Marks)

QUESTION TWO – 20 MARKS

a) i) Define the term "Schema" as used in Database System" (2 Marks)

ii) Discuss three advantages and three disadvantages of DBMS (6 Marks)

b) Describe three types of Databases (6 marks)

c) Discuss three main mechanisms for enforcing security in Databases (6 Marks)

QUESTION THREE – 20 MARKS

a) Identify two properties that a primary key must possess. (2 Marks)

b) Explain the benefits of the object-oriented data modeling (6 Marks)

c) Define the following attributes in relational database design;

i. Multi-valued attribute (2 Marks)

ii. Composite attribute (2 Marks)

iii. Derived attribute (2Marks)

d) Briefly explain the following concepts

i) Physical Database Design (3 Marks)

ii) Logical design (3 Marks)

QUESTION FOUR – 20 MARKS

a) Define the term transaction as used in database management systems and using relevant example elucidate on ACID properties of transactions. [10 Marks]

b) Describe FIVE types of keys used database systems. [10 Marks]

QUESTION FIVE- 20 MARKS

a) Explain any THREE basis on which databases are classified. [6 Marks]

b) Discuss THREE levels of database schema architecture. [6 Marks]

c) Write SQL statements to implement the following.

i. Create a table. [2 Marks]

ii. Select all information in the table. [2 Marks]

iii. Delete a table. [2 Marks]

iv. Order records in a table. [2 Marks]