JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF SCIENCE

2ND YEAR 2ND SEMESTER 2013/2014 ACADEMIC YEAR

CENTRE: MAIN

COURSE CODE: SCS 212

COURSE TITLE: DATABASE SYSTEM

EXAM VENUE: AH **STREAM: BSc. Computer Security & Forensics**

DATE: 13/12/2013 **EXAM SESSION: 11.30 – 1.30 PM**

TIME: 2 HOURS

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

a) Define the term data integrity (2 marks)
b) Explain 4 type of data integrity (8 marks)
c) Explain three factors to consider when designing a database (2 marks)
d) Explain any four disadvantages of file processing system (8 marks)

Question Two

a) Explain the term fragmentation as used in database systems and why it's necessary.
. (8 marks)
b) Define the following terms
    i. Cardinality ratio
    ii. Logical data independence
    iii. Physical data independence
    iv. Distributed database (8 marks)
c) Differentiate between a data and a database administrator (4 marks)

Question three

a) Explain the term database security (2 marks)
b) List six different types of security situations that could affect a database system (6 marks)
c) Explain any six controls that will enhance the security of a database system (12 marks)

Question four

a) Explain the following properties of transaction
    i. Atomicity
    ii. consistency
    iii. Isolation
    iv. Durability (8 marks)
b) Explain any six causes of database (6 marks)
c) Explain factors to consider when designing a database (6 marks)

Question five

a) Explain the following as used in database system
    i. Foreign key
    ii. Functional dependence
    iii. Normalization (6 marks)
b) Explain four advantages of object oriented database (OODB) (8 marks)
c) Explain three security features of relational database management systems (6 marks)