AFRICA UNIVERSITY

(A United Methodist-Related Institution)

"Investing in Africa's Future"

CHANS

COURSE TITLE: CIS 301 – DATABASE SYSTEMS

2ND SEMESTER: FINAL EXAMINATION 1 APRIL, 2019

LECTURER: MR J. CHINZVENDE

DURATION: 3 HOURS

INSTRUCTIONS

Answer **any (4) four questions**
Total possible mark is 100

Start **each** question on a new page in your answer Booklet.

The marks allocated to **each** question are shown at the end of the question.

Answer any four (4) questions.

Credit will be awarded for logical, systematic and neat presentations.

1. **Database and file systems:**
   a. Define the following terms as they are used in database management systems
      i. Bit.
      ii. Byte.
      iii. Field.
      iv. Character.
      v. File. [05]
   b. Discuss the advantages of a Database management system as compared to a traditional file system. [10]
   c. Give a brief description of each of the three models of Database modeling.

      [10]

2. **Database Systems**
   a. Define the following terms as they are used in database systems
      i. Primary key
      ii. Foreign key
      iii. Composite key
      iv. Entity Integrity
      v. Referential Integrity [05]

a. What are the attributes of information relevant for management decision making

   [10]
b. Who are the users directly and indirectly involved in the Database life cycle [10]

3. **Data integrity**

a. Define the following terms as they are used in Relational algebra
   i. Relation
   ii. Tuple
   iii. Attribute
   iv. Domain
   v. Entity [05]

b. Given a brief description of the following terms used in data integrity

   i. Referential integrity
   ii. Entity integrity
   iii. Domain integrity
   iv. Use defined integrity
   v. Back up and Restoration [10]

c. Describe the Importance of Data Integrity [10]

4. Normalisation

a. Define the following terms as they are used in Database normalisation

i. Normalisation
ii. Database
iii. Anomaly
iv. Normal form
v. BCNF [05]

b. What does it mean when a table is said to be in the following normal forms?

i. 1NF
ii. 2nd NF
iii. 3RD NF
iv. 4th NF
v. 5th NF [10]

c. Describe the advantages of database normalisation [10]

5. Data manipulation and data definition languages

a. What is the effect of the following SQL statements on a table?

i. SELECT
ii. UPDATE
iii. INSERT
iv. DELETE
v. INSERT INTO [05]

b. Use the **Students** table below to answer the questions that follow

StudentID	Name	Gender	Country
170200	Tom	Male	
170300	Tatenda	Female	
170400	Barbra	Female	
170500	Ana	Female	
170600	Tino	Male	

Write SQL statements to perfume the following actions

i. Retrieve all students from **Students** table
ii. Retrieve all Female students
iii. Get all student who Names start with T
iv. Get all students from Zimbabwe
v. Count all Countries in the country table [10]

c. Describe the effect of the following DDL statements on Database object :

i. CREATE
ii. ALTER
iii. DROP
iv. GRANT
v. USE [10]

6. Stored procedures

a. Define the following terms as they are used in SQL Server Database

i. Query
ii. Table
iii. Stored procedure
iv. Trigger
v. Job [05]

b. What are the advantages of using stored procedures? [10]

c. Describe the disadvantages of Stored procedures [10]

7. Database design

a. Define the following terms as they are used in database design

i. Database
ii. Record
iii. Data
iv. Meta Data
v. Information [05]

b What is involved in each of the following stages of database design

i. Requirement analysis
ii. Logical design
iii. Physical Design
iv. Coding
v. Implementation [10]

c.. Describe the ways a new systems can be implemented within an organisation [10]

8. SQL Server Installation and security

a. What do you understand by the following terms as they are used in SQL Server ?

i. Backup
ii. Restore
iii. Detach
iv. Encryption
v. Database integrity [05]

b Describe the backup strategies you know [10]

c. How can the security of an SQL Server database be improved? [10]

END.