



"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

CIS 301 DATABASE SYSTEMS

LECTURER: MRS N SARAI

DURATION: 3 HOURS

INSTRUCTIONS

1. Do not write your name on the answer sheet

2. Use Answer Sheets Provided

3. Begin your answer for Each Question on a New Page

4. Credit is Given for Neat Presentation



Question 1

- a) Design an ER diagram for a pharmacy located in Mutare. Evaluate the entities, attributes and cardinality ratios associated. [9]
- b) Briefly describe history of database systems. [10]
- c) Consider the following relations with key underlined
Student (S#, Sname, Address)
Course (C#, Cname, Hours, S#)
Write SQL queries for the following:
 - i. Return the address of the student called "Mary Joe" [2]
 - ii. List the names of students who take the course "Database system". [4]

Question 2

- a) Discuss potential risks that may affect a database system being used within a clinic and the measures that can taken to minimise these risks. [10]
- b) Describe the generic database life cycle. [15]

Question 3

- a) List and explain the basic properties of a transaction. [8]
- b) Describe the role of primary keys and foreign keys. [6]
- c) Differentiate between View Definition language (VDL) and Storage definition language. (SDL) [4]
- d) Given the following relations sketch the tables (database schemas) that are produced when the queries below are executed.
Doctor (doctorId, depId, Salary, hobby)
Dept (depId,dname,floor, budget)
 - i. SELECT * FROM Doctor [1]
 - ii. SELECT * FROM Doctor , Dept [3]
 - iii. SELECT doctorId,dname,budget FROM Doctor, Dept where Doctor. depId = Dept.depId [3]



Question 4

- Discuss advantages and disadvantages of database systems over manual file systems. [10]
- Describe using suitable examples, various users of a database system. [6]
- Given the patient_dental_appointment table below.

StaffNo	DentistName	PatientNo	PatientName	Appointment Date Time	SurgeryNo
S1011	Tony Smith	P100	G White	12/12/16, 1000	S10
S1011	Tony Smith	P105	J Bell	13/12/16, 1200	S15
S1024	Hellen Zip	P108	I Kay	14/09/16,1300	S10
S1024	Hellen Zip	P108	I Kay	10/09/16,1000	S10
S1032	Robin Plain	P105	J Bell	20/10/16, 1200	S15
S1032	Robin Plain	P110	J Walker	15/09/16,1000	S13

Answer the following questions:

- Is the table in 1NF? Justify. [4]
- Hence or otherwise decompose to 2NF. [5]

Question 5

- Describe using a suitable diagram, the 3 schema architecture. [12]
- Consider the following two tables about a student and his origin.

Name	Age	Weight
Peter	34	50
Jelly	41	40
John	31	90
Rudo	22	70

Origin
Mutare
Harare
Gweru

Explain, showing resultant tables how the following operations are used in relational algebra.

- Cartesian product [8]
- Rename [4]

