



# ZIMBABWE EZEKIEL GUTI UNIVERSITY

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## FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

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### DEPARTMENT OF DIGITAL TECHNOLOGY

#### EXAMINATION PAPER

**COURSE CODE** : CDT 107  
**COURSE TITLE** : Database Systems  
**DURATION** : 3 Hours  
**LEVEL** : 1.2  
**DATE** : November 2019

12 NOV 2019

13 NOV 2019

#### INSTRUCTIONS TO CANDIDATES:

1. Answer any FOUR questions only.
2. Each question carries 25 Marks.

### Question 1

- (a) List and explain any 4 functions of a DBMS. [12 Marks]
- (b) With the aid of the diagram, briefly describe the network diagram. [5 Marks]
- (c) List and explain any 4 properties of a relational model. [8 Marks]

### Question 2

- (a) With the aid of a clearly labelled diagram explain the three level ANSI – SPARC architecture and explain how it is related to data independence. [12 Marks]
- (b) List and explain any four advantages derived from using a DBMS package [8 Marks]
- (c) Explain the concept of data dependence in relation to the file system approach. [5 Marks]

### Question 3

- (a) Explain the following using relational tables as illustrations
- (i) Referential integrity [5 Marks]
- (ii) Entity integrity [5 Marks]
- (b) Define the following symbols used in E-R Diagrams
- (i) Entity [4 Marks]
- (ii) Attribute [4 Marks]
- (iii) Relationship [3 Marks]

(c) A relational database schema is represented as follows

Author (AuthorID, Name, Surname, Address)

Suggest the data types for the fields in the table Author [4 Marks]

#### Question 4

(a) Distinguish between a Data Administrator and a Database Administrator [5 Marks]

(b) Explain the difference between physical data independence and logical data independence. [8 Marks]

(c) Database system users are differentiated by the way they expect to interact with the system. Explain the different types of database users clearly elaborating how they interact with the database system. [12 Marks]

#### Question 5

(a) Define the following relational keys:

(i) Candidate key [4 Marks]

(ii) Primary key [4 Marks]

(iii) Composite key [4 Marks]

(iv) Foreign key [4 Marks]

(b) Is a primary key also a candidate key? Explain. [5 Marks]

(c) Define the following terms:

(i) Degree of a relation [2 Marks]

(ii) Domain [2 Marks]