ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF, SCIENCE, TECHNOLOGY, AGRIC AND FOOD SYSTEMS DEVELOPMENT

DEPARTMENT OF DIGITAL TECHNOLOGY AND INFORMATION SYSTEMS

EXAMINATION PAPER

COURSE CODE	:	MIS 106
COURSE TITLE	:	Database Systems
SPECIAL REQUIREMENTS	:	None
DURATION	:	3 Hours
LEVEL	:	1.2
DATE	:	

11 OCT 2023

INSTRUCTIONS TO CANDIDATES:

1. Answer any 4 Questions from the whole paper.
2. The total Marks for the examination is 100.
3. The marks allocation for each question are indicated in square brackets [] .

Question 1

a) Name the stages in database design and describe each. **[10]**

b) Define a Database **[3]**

c) Differentiate between metadata and data **[2]**

d) Discuss each of the following concepts in the context of the relational data model:

a. Relationship. **[2]**
b. Entity. **[2]**
c. Attribute. **[2]**
d. Domain. **[2]**
e. Entity type. **[2]**

[TOTAL 25]

Question 2

a) Discuss the disadvantages of the traditional file systems as compared to database systems.[20]
b) Differentiate between data and information [4]
c) What is a key in databases[1]

[TOTAL 25]

Question 3

a) What is an ER diagram? **[2]**
b) Suppose you are given the following requirements for a simple database for the Northern Zone Hockey League(NZHL):
   - The NZHL has many teams,
   - Each team has a name, a city, a coach, a captain, and a set of players,
   - Each player belongs to only one team,
   - Each player has a name, a position, a skill level, and a set of injury records,
   - A team captain is also a player,
   - A game is played between two teams (referred to as host_team and guest_team) and has a date and a score (such as 2 to1).

   Construct an ER diagram for the NZHL database. **[10]**
c) Discuss the acid properties of a database. **[10]**
d) Give three different application areas of databases **[3]**

[TOTAL 25]

Question 4

a. Give a brief discussion of the advantages of DBMS **[15]**

b. Discuss each of the following concepts in the context of the relational data model:

f. Tuple. **[2]**
g. View. **[2]**
h. Cardinality. **[2]**
i. Relation. **[2]**
j. Degree. **[2]**

[TOTAL 25]

Question 5

a. Explain a deadlock. **[4]**
b. Describe 2 ways in which the deadlock can be prevented. **[6]**
c. Use two transactions T1 and T2 to demonstrate deadlock. **[4]**
d. Use diagrasms to represent the following ERD elements
   i) Entity [2]
   ii) Weak entity [2]
   iii) Multivalued attribute [2]
   iv) Weak relationship [2]
e. Explain what is meant by a transaction [3]

[TOTAL 25]

End of Paper

9/6 pm