THE CATHOLIC UNIVERSITY OF EASTERN AFRICA
A. M. E. C. E. A

GABA CAMPUS - ELDORET

MAIN EXAMINATION

SEPTEMBER – DECEMBER 2022 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

DIPLOMA IN INFORMATION TECHNOLOGY

DIT 003: DATABASE SYSTEMS

Date: December 2022	Duration: 2 Hours
Instructions: Answer Question ONE and any other TWO Questions	

QUESTION ONE

a) Define the following terms   **(10 Marks)**

     i)   Database

     ii) Data

     iii) Information

     iv) Table

     v) Relationship

b) List three data models   **(3 Marks)**

c) What are the disadvantages of File processing?   **(2 Marks)**

d) What is DBMS? Explain two advantages and two disadvantages of DBMS.

                                                                  (5 Marks)

e) What are the different components of DBMS?   **(4 Marks)**

f) Explain different types of databases.   **(3 Marks)**

g) Explain Data anomalies.   **(1 Mark)**

h) What are the functions of DBMS?   **(2 Marks)**

QUESTION TWO

a) How can you say database is corporate asset of an organization?

                                                             (2 Marks)

ISO 9001:2015 Certified by the Kenya Bureau of Standards.

b) Explain the role of databases in organizations (OR) Describe and contrast the information needs at the strategic, tactical, and operational levels in an organization.

(5 Marks)

c) Describe the DBA's responsibilities (OR) Explain managerial and Technical functionalities of DBA. **(5 Marks)**

d) How can the DBA function be placed within the organization chart? What effect(s) will that placement have on the DBA function? **(5 Marks)**

e) What are security vulnerabilities? What is a security threat? Give some examples of security vulnerabilities that exist in different IS components.

(3 Marks)

QUESTION THREE

a) What is Normalization? Explain its advantages. **(5 Marks)**
   i) Explain INF. **(3 Marks)**
   ii) Explain 2 NF. **(3 Marks)**
   iii) Explain 3 NF. **(3 Marks)**
b) Write about Denormalization? **(2 Marks)**
c) Explain SDLC in detail. **(2 Marks)**
d) Explain conceptual design in detail. **(2 Marks)**

QUESTION FOUR

a) What is a transaction and explain its properties? **(3 Marks)**

b) Explain about transaction log. **(2 Marks)**

c) What is Scheduler and explain its functions? **(3 Marks)**

d) What are the difference concurrent control problems? Explain with examples.

(5 Marks)

e) Explain about Deadlocks. **(5 Marks)**

f) Explain different types of locks. **(2 Marks)**

QUESTION FIVE

a) What is a Table and explain its characteristics? **(2 Marks)**

ISO 9001:2015 Certified by the Kenya Bureau of Standards.

b) Explain different types of keys available in Relational Model. **(3 Marks)**

c) What are the different types of Relationships in DBMS. **(4 Marks)**

d) What is INDEX? **(2 Marks)**

e) Explain the importance of Database models **(3 Marks)**

f) Explain Hierarchical Data Model. **(2 Marks)**

g) Explain Network Data Model. **(2 Marks)**

h) Explain Relational Database Model. **(2 Marks)**

END