



# **GRETSA UNIVERSITY - THIKA**

## **UNIVERSITY EXAMINATIONS JANUARY - APRIL 2021 SEMESTER**

### **CERTIFICATE IN INFORMATION TECHNOLOGY**

**COURSE CODE: CFIT 021**

**COURSE TITLE: FUNDAMENTALS OF DATABASE SYSTEMS**

**DATE: 10 MAY 2021**

**TIME: 11.30 AM - 1.30 PM**

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#### **INSTRUCTIONS TO CANDIDATES**

1. SECTION A IS **COMPULSORY**.
2. SECTION B: ANSWER ANY OTHER **THREE** QUESTIONS.
3. **DO NOT** WRITE ANYTHING ON THIS QUESTION PAPER AS IT WILL BE AN EXAM IRREGULARITY.
4. ALL ROUGH WORK SHOULD BE AT THE BACK OF YOUR ANSWER BOOKLET AND CROSSED OUT.

**CAUTION:** *All exam rooms are under CCTV surveillance during the examination period.*

## **SECTION A: COMPULSORY**

### **QUESTION ONE**

- a) With an aid of a diagram, describe the hierarchical database of Grets University registration process. **[7 Marks]**
- b) Using an applicable structure discuss one to many (1: M) relationship. **[6 Marks]**
- c) Given the following entities extracted from Grets University databases; student, course, faculty, department. Discuss the expected attributes. **[6 Marks]**
- d) Briefly explain the following terms:
- i. Entity **[2 Marks]**
  - ii. Attribute **[2 Marks]**
  - iii. Relation **[2 Marks]**
  - iv. Database **[2 Marks]**
- e) Describe the usefulness of database in organizations. **[3 Marks]**
- f) Outline and explain the disadvantages of database. **[2 Marks]**
- g) Briefly explain the two goals of normalization in databases. **[4 Marks]**
- h) Outline and discuss the application areas of database systems. **[4 Marks]**

## **SECTION B: ANSWER ANY THREE QUESTIONS**

### **QUESTION TWO**

- a) Explain the meanings of the following terms as used in database system:
- i. Prime attribute **[2 Marks]**
  - ii. Non-Prime attribute **[2 Marks]**
- b) Explain the main characteristics of database system. **[6 Marks]**
- c) Describe the characteristics of a table in second normal form (2NF). **[4 Marks]**
- d) Explain three differences between data administration and database administration. **[6 Marks]**

### **QUESTION THREE**

- a) Briefly explain the following terms of providing security for a database.
- i. Authorization **[2 Marks]**
  - ii. Views **[2 Marks]**
  - iii. Back-up and recovery **[2 Marks]**
  - iv. Integrity **[2 Marks]**
  - v. Encryption **[2 Marks]**

- b) A customer database has a table called customer which contains the fields, customer name, customer number, address, order number and amount. Design SQL statement that displays customer number, name and amount for all customers whose amount is 500. [6 Marks]
- c) Stating its importance, explain the term multiple view as used in database system. [4 Marks]

#### QUESTION FOUR

- a) Differentiate between Data Manipulation Language and Data Control Language. [4 Marks]
- b) Draw ERD symbols for the following associations:
- i. One-to-one association [2 Marks]
  - ii. One-to-many association [2 Marks]
  - iii. Many-to many association [2 Marks]
- c) Give the following attributes of employees database table: -
- Employee no
  - Employee name
  - Gender
  - Id No
  - Salary
  - Telephone number
- i. Using SQL, write a statement for creating employees database table. Specifying appropriate data types and primary key. [6 Marks]
- ii. Generate a query that displays all female employees whose salary is above 50 000. [4 Marks]

#### QUESTION FIVE

- a) Define normalization and clearly explain any **two** objectives of normalization. [5 Marks]
- b) What advantages do you gain by implementing electronic database systems in your organization? [5 Marks]
- c) Explain the importance of SQL. [2 Marks]
- d) Describe what would be achieved by the following SQL statements
- i. CREATE [2 Marks]
  - ii. INSERT INTO [2 Marks]
  - iii. SELECT [2 Marks]
  - iv. DROP [2 Marks]