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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2018/2019 ACADEMIC YEAR THREE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY**

**FOR THE DEGREE OF BACHELOR OF INFORMATION SCIENCE**

**COURSE CODE: COM 318**

**COURSE TITLE: DATABASE SYSTEMS**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 10/02/2020 TIME: 09.00-11.00 AM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of THREE (3) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Define the following terms; **[6 marks]**
   * 1. Database Management systems
     2. Database Application
     3. Database Security
2. In terms of databases differentiate between; **[6 marks]**
   * 1. Logical data Independence and Physical Data Independence
     2. Data Administrator and Database Administrator
     3. Physical database design and Logical database design
3. Using examples explain the following SQL statements; **[8 marks]**
   * 1. Alter
     2. Drop
     3. Delete
     4. Default
4. Explain the following as used in Ms SQL server **[2 marks]**
   * 1. Server authentication
     2. Windows Authentication
5. With examples, state the use of DCL, DDL and DML commands in SQL. **[6 marks]**
6. What is the advantage of using Indexes in a database  **[2 marks]**

**QUESTION TWO**

1. The consistency and reliability aspects of transactions are due to the ACID properties of transactions. By defining what a transaction is and using appropriate examples explain these properties in relation to concurrency control **[14 marks]**
2. Discuss THREE possible benefits of creating and using Views in databases. **[6 marks]**

**QUESTION THREE**

1. iTechom LTD has been experiencing some security breaches on their database, as the Database manager discuss some of the key mitigation steps you would take to avert the situation.  **[8 marks]**
2. Constraints are key to ensuring referential integrity of your data in the database, using SQL statement(s) show how you would apply THREE kinds of constraints when creating a database object. **[6 marks]**
3. Create a database called **libraryStock** {data; **size=2, maxsize=4, filegrowth=2**}, { log; **size=1, maxsize=2, filegrowth=1}. [6 marks]**

**QUESTION FOUR**

1. Outline TWO Join types used in SQL **[2 marks]**
2. Define the term Database backup giving the three types of backups that you can use in the database.  **[8 marks]**
3. Using the following Table description, write SQL statements to;

**Products (Pno varchar, Pname char, Price int, Manufacturer char, Category char);**

* + 1. Create a View called Pprice that contains only the **Pno, Pname** and **Manufacturer.** **[5 marks]**
    2. Create an Index on both **Pno** and **Category**. **[5 marks]**

**QUESTION FIVE**

**COURSE TABLE**

|  |  |  |  |
| --- | --- | --- | --- |
| **CourseID** | **Day** | **MaxHrs** | **CourseWeight** |
| DC201 | Mondays | 50 | 5 |
| DC205 | Fridays | 60 | 4 |
| DC208 | Mondays | 30 | 4.5 |
| DC202 | Wednesdays | 80 | 5 |

1. Using the above relation, answer the following;
   * 1. Write the SQL statement that would realize the table. **[4 marks]**
     2. Write the SQL statement that would populate the table. **[6 marks]**
     3. Write SQL query to obtain information on courses taught on Mondays and have a weight above 4.5 **[4 marks]**
     4. Write SQL statement that corrects the MaxHrs for DC202 to 70. **[4 marks]**
     5. Write SQL statement that would add the total number of hours of all the courses  **[2 marks]**