Class Test (1) Examination: Spring-2025

Course Code: CIS 222 (Batch: 18)

Course Title: Database Management System (DBMS)

Date: 11/02/2025

Time: 30 Minutes **Total Marks: 15**

1. List the benefits of using a database in the DIU Library Management System. [4]

2 What is the purpose of a foreign key, and how does it help maintain referential integrity in a relational database? [5]

3. Identify the possible *super keys*, *candidate keys*, *primary key*, and *alternate keys* for the following schema: [6]

Books (*BookID, Title, Author, ISBN, Category, Publisher, Edition, CopiesAvailable*)

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Class Test (2) Examination: Spring-2025
Course Code: CIS 222 (Batch: 18)
Course Title: Database Management System (DBMS)
Date: 18/03/2025

Time: 30 Minutes **Total Marks: 15**

1. ***Draw an ER diagram for the following application from the manufacturing industry:*** [5]
   1. Each supplier has a unique name.
   2. More than one supplier can be located in the same city.
   3. Each part has a unique part number.
   4. Each part has a color.
   5. A supplier can supply more than one part.
   6. A part can be supplied by more than one supplier.
   7. A supplier can supply a fixed quantity of each part.

2. ***Write the SQL queries for the following based on the table below:*** [10]

   I. Retrieve the second highest number of copies available.
   II. Find books published after the year 2000 and are of Fiction genre.
   III. Find the most recent book published.
   IV. Find all books where at least 5 copies are available.
   V. Retrieve all books that belong to 'Self-Help' or 'Biography' category.

Table: Library_Books

BookID	Title	Author	Genre	PublishedYear	CopiesAvailable
1	The Alchemist	Paulo Coelho	Fiction	1988	5
2	Sapiens	Yuval Noah Harari	History	2011	3
3	Atomic Habits	James Clear	Self-Help	2018	7
4	To Kill a Mockingbird	Harper Lee	Fiction	1960	6
5	Becoming	Michelle Obama	Biography	2020	8
6	The Catcher in the Rye	J.D. Salinger	Fiction	1951	5
7	The Power of Habit	Charles Duhigg	Self-Help	2012	4
8	Educated	Tara Westover	Biography	2018	8

Class Test (3) Examination: Spring-2025
Course Code: CIS 222 (Batch: 18)
Course Title: Database Management System (DBMS)
Date: 10/04/2025

Time: 30 Minutes **Total Marks: 15**

1. The *DIU Transport System* is displayed in the following table. [10]

A Bus_No	B Driver_Name	C Driver_Phone	D Route	E Stops
B-101	Md. Karim	01711111111	Dhanmondi-DIU	Dhanmondi, Jigatola, Kalabagan
B-102	Md. Rahim	01712222222	Uttara-DIU	Uttara, Airport, Banani
B-103	Md. Salam	01713333333	Mirpur-DIU	Mirpur-10, Mirpur-1, Agargaon
B-104	Md. Karim	01711111111	Dhanmondi-DIU	Dhanmondi, Jigatola, Kalabagan
B-105	Md. Rafiq	01714444444	Mohammadpur-DIU	Mohammadpur, Asad Gate, Dhanmondi

Now, display the result of each step in the normalization process (up to 3NF).

2. Discuss outer joins with examples. Why are these joins necessary? [5]

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