

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 DTU 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*)

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 9	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

8 2 6 5 5 5

Class Test (3) Examination: Spring-2025

Course Code: CIS 222 (Batch: 18)

Course Title: Database Management System (DBMS)

Date: 10/04/2025

Total Marks: 15

Time: 30 Minutes

[10]

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

Bus_No ^A	Driver_Name ^B	Driver_Phone ^C	Route ^D	Stops ^E
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).

[5]

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