



Daffodil International University
Department of ITM
Faculty of Science & Information Technology
Final Examination, Spring 2025

Course Code: ITM 221; Course Title: Database Management Systems
Sections & Teachers: NJ

Time: 2:00 Hrs

Marks: 40

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

a)

Employee

Employee_id	Employee_name	Department_ID	Department
101	Steven	200	HR
202	John Doe	201	Finance
301	Lex	114	Marketing
402	Alexander	203	Accounting
501	Bruce	121	IT

[Marks-10]

CLO-3
Level-3

Salary

EMPLOYEE_ID	Salary	PHONE_NUMBER	HIRE_DATE	Department_ID
101	20000	5151234567	2003-06-17	200
202	3598	5241234567	2005-09-21	201
301	3000	5151258567	2001-01-13	114
404	79000	5151248567	2006-01-03	203
505	348799	515489567	2005-06-25	121
102	12390	578489567	2006-02-05	123

Develop SQL queries for the given question:

- Retrieve the average salary for each department.
- Count the number of employees in each department.
- Get the details of employees who work in the "Marketing Department".
- Get the employee information whose name starts with "A".
- Find the phone numbers of those employees who were hired between 17th June 2003 and 3rd January 2006.

2.

Consider the following tables:

Topic: DIU library Management

CLO-
Level-

DIU library management data where student's information is recorded, when a student borrowed a book, when he returned etc.

StudentID: 024222000518888888
 StudentName: Sumaiya
 StudentEmail: sumu23@gmail.com
 StudentPhoneNo: 01789955454
 BorrowID: 04

DepartmentName: ITM
 DepartmentNo: 51
 BorrowedDate: 20-04-24
 ReturnDate: 04-05-24

BookID	BookName	AuthorName	Publisher
04	To Kill a Mockingbird	Harper Lee	HarperCollins
05	1984	George Orwell	Penguin Books
06	The Great Gatsby	F. Scott Fitzgerald	Scribner

a) Normalize the table from 1NF up to BCNF; examining every step of the process from those tables given in question 2 with proper explanation. [Marks-8]

b) Distinguish between full functional dependency and partial dependency from the above tables. [Marks-2]

c) Analyze two anomalies that may exist in the above tables. [Marks-4]

d) Explain the current normalization level of the given table. [Marks-2]

Student Id Student_name Student_Address Course_no Course_title

a) Establish an Entity relationship diagram based on the tables given in question 2 with appropriate attribute type, cardinality, and relationship. [Marks-5] CLO-2 Level-3

b) Consider the following 2 tables find the output of Inner join and Left outer join [Marks-4]

flightNo	from	to	distance	departs	aircraftId	aircraftId	airName	range
101	New York	Los Angeles	4500	10:00 AM	A1	A1	Boeing 737	5000
102	Chicago	Miami	2000	2:00 PM	A2	A2	Airbus A320	4500
103	Dallas	Seattle	3000	6:00 PM	A2	A3	Embraer E175	3500
104	Boston	Houston	2600	8:30 AM	A6	A4	Bombardier CRJ	4000

a) Alice initiates a transfer of ₹5,000 to Bob. The system debits Alice's account, but due to a network failure, the credit to Bob's account fails. Based on this case, which ACID properties are affected, explain? Explain the states of the transaction for that transaction [Marks-5] CLO-5 Level-2