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Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Final Examination, Summer 2025

Course Code: SE 223; Course Title: Database System

Sections & Teachers: NJ(A), SS(B,K), KRA(C, F), ZZZ(D), AR(E, G,H), FM(I), AAM(J)

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)

Salesman

salesman_id	name	city	commision
5001	Steven	New York	0.15
5002	John Doe	Paris	0.13
5003	Lex	London	0.11
5004	Alexander	Paris	0.14
5005	Bruce	Rome	0.15

Customer

cust_id	cust_name	city	grade	salesman_id
3001	Nick Rimando	New York	100	5001
3002	Brad Davis	New York	200	5001
3003	Graham Zusi	California	200	5005
3004	Julian Green	London	300	5003
3005	Brad Guzan	Paris	300	5005
3006	Jozy Altidor	Berlin	100	5002

Solve these SQL queries for the given question:

a. Retrieve the names and cities of all salesmen who are based in Paris.
b: Find the average commission of all salesmen.
c. List the customer names and their corresponding salesmen's names.
d. Display all salesmen and their customers, including salesmen who have no customers.
e: Show the total number of customers handled by each salesman.
f. List salesmen who handle more than 1 customer.
g. Find the names of customers served by salesmen from New York. **(Nested Query)**
h. Display the names of customers whose names start with the letter B.
i. Retrieve the names of customers whose grade is between 200 and 300.
j. Find the names of salesmen who serve customers with a grade higher than the average grade of all customers. **(Nested Query)**

[Marks-10] **CLO-3** ***Level-3***

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2. Consider the following tables:

BookStore

CustomerID: C001Z CustomerName: Alice Jhonson CustomerPhone: 555-1234 CustomerAddress: 56 Maple Street				ISBN: 234AZ BookTitle: Introduction to AI AuthorName: John Smith AuthorCountry: USA				
OrderID	**OrderDate**	**PublisherName**	**PublisherAddress**	**Genre**	**Price**	**Quantity**	**TotalAmount**	**PaymentMethod**
101	2025-08-01	TechPress	New York	Technology	50	2	100	Credit Card
101	2025-08-01	TechPress	New York	Technology	60	1	60	Credit Card
102	2025-08-02	EduWorld	London	Technology	55	1	55	Cash
103	2025-08-02	WordCraft	Toronto	Literature	40	3	120	Credit Card

CLO-4 *Level-4*

a) **Examine** the given *BookStore* table and show step by step how it can be normalized from 1NF to 3NF, explaining clearly what happens at each stage. [Marks-8]

b) **Differentiate** between full functional dependency and partial dependency using the tables above. [Marks-4]

c) [Marks-4]

Student

StudentID	StudentName	CourseID	CourseName	Instructor	InstructorPhone	Grade

Analyze the given *Student* table and identify its current normal form (UNF, 1NF, 2NF, or 3NF), justifying your answer.

d) **Explain** four anomalies that may exist in the above tables. [Marks-4]

3. *a)* **Illustrate** an ER diagram from the tables in question 2, showing attribute types, cardinality, and relationships. [Marks-5] CLO-2 *Level-4*

4. *a)* **Describe** each ACID property and explain how it helps keep database transactions reliable, accurate, and well-coordinated. [Marks-3] CLO-5 *Level-2*

b) **Visualize** the stages of the transaction with a proper explanation. [Marks-2]

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