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# Daffodil International University

## Faculty of Science & Information Technology

### Final Examination, Spring 2023

### Course Code: CSE311 Course Title: Database Management System

**Level: 3 Term: 1**

**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.]*

1. Consider the following schemas: CO2

Course (id, name, course_code)
Student (id, name, email, phone)
Enrolment (id, course_id, student_id, enrollment_date, enrollment_status)

a) Write an SQL query to list all of the students id, name and email in ascending order of ID who are enrolled in course with code "CSE311" [2]

b) Write an SQL query find the name and ID of the students who enrolled in "Database Management System" course after 15 March 2023. [1]

c) Write an SQL query to find the total number of students in each course with course name. [2.5]

d) Write an SQL query to find course names that have more than 15 student enrolment. [3]

2. Consider the following tables: CO2

| Ticket No. | Travel Date | Travel Time | Seat No. | Passenger ID | Bus No. |
|---|---|---|---|---|---|
| T301 | 03-06-2023 | 10:30 AM | D3 | 163-15-54215 | S_11 |
| T301 | 03-06-2023 | 10:30 AM | D4 | 163-15-54215 | S_11 |
| T302 | 03-06-2023 | 10:30 AM | A1 | 183-15-2458 | S_02 |
| T302 | 03-06-2023 | 10:30 AM | A2 | 183-15-2458 | S_02 |
| T302 | 03-06-2023 | 10:30 AM | A3 | 183-15-2458 | S_02 |
| T304 | 05-06-2023 | 7:00 AM | D2 | 123-15-8546 | S_12 |
| T305 | 07-06-2023 | 7:00 AM | C2 | 131-15-3167 | S_12 |

| Passenger ID | Passenger Name | Passenger Contact |
|---|---|---|
| 163-15-54215 | Maruf Ahmed | 0175224668 |
| 183-15-2458 | Jahangir Khan | 0185345687 |
| 123-15-8546 | Rocin Shetty | 0154687453 |
| 131-15-3167 | Bristy Zahan | 0154687453 |

| Bus No. | Bus Name | Staff | Route Name |
|---|---|---|---|
| S_11 | Surjomukhi 11 | Johir | Dhanmondi |
| S_12 | Surjomukhi 12 | Alamin | Uttara |
| S_02 | Surjomukhi 2 | Alamin | Mirpur |

a) Write an SQL query to find the seat numbers of Student bearing ID 183-15-2458 travelling on 03-06-2023 at 10:30 AM. [1]

b) Find the contact information of the passenger who bought Ticket Number T302. [2]

c) List the names of all students who have travelled to Uttara Between 03-06-2023 to 09-06-2023. [3]

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d) Find the name of the staff who assisted the passenger with ticket no T302. [2]

3. Discover Normalization for the following table up to Third Normal Form. Be certain to indicate necessary constraints. [10] CO4

| Order Number | Order Date | Customer ID | Customer Name | Customer Address | Product ID | Product Name | Quantity | Price |
|---|---|---|---|---|---|---|---|---|
| 001 | 2022-01-01 | C001 | John Smith | 123 Main St | P001, P002 | MacBook, Laser Printer | 2, 1 | 1000, 500 |
| 002 | 2022-01-05 | C002 | Jane Doe | 456 Oak Ave | P004 | Asus Zenbook | 1 | 1200 |
| 003 | 2022-01-10 | C003 | Bob Johnson | 789 Maple St | P003, P005 | Samsung Z-Fold, Realme Bud 3 | 3, 1 | 3000, 300 |

4. How do triggers work in a database management system, and what are some practical use cases for implementing triggers? [4.5] CO3

5. Create appropriate examples to demonstrate the use of rollback and commit within a database transaction? [4.5] CO3

6. How do ACID properties guarantee the reliability and consistency of transactions in a database system? [4.5] CO3