Databases CS 340
Quiz 2 - V2

Name:
ID:

- Do not copy from others or share answers.
- Mobile phones and electronic devices are strictly prohibited.
- Any unfair means will result in cancellation of your paper.
- Attempt all questions and write answers in the space provided.

Section A: MCQS (5 x 2 = 10 marks)

Q1. You run the query:

```
SELECT TOP (5) WITH TIES Name, ListPrice
FROM SalesLT.Product
ORDER BY ListPrice DESC;
```

Which of the following is the most accurate description of the result set?

a. Exactly 5 rows are always returned
b. The query raises an error unless there is a unique key in the ORDER BY clause to break ties.
c. The query returns all rows that share the top 5 distinct ListPrice values, even if this produces far more than 5 rows.
d. At least 5 rows are returned; if the 5th row's ListPrice is shared, all rows with that same ListPrice are included.

Q2. You're asked to generate an invoice report showing Customer CompanyName, PurchaseOrderNumber, and TotalDue.
Which join is correct?
Tables: SalesLT.Customer, SalesLT.SalesOrderHeader

a. Customer LEFT JOIN SalesOrderHeader
b. Customer INNER JOIN SalesOrderHeader
c. SalesOrderHeader RIGHT JOIN Customer
d. CROSS JOIN

Q3. What does this query return?

```
SELECT od.SalesOrderID, od.ProductID, od.OrderQty
FROM SalesOrderDetail od
WHERE od.OrderQty =
  (SELECT MAX(OrderQty)
   FROM SalesOrderDetail d
   WHERE od.ProductID = d.ProductID);
```

a. All order detail rows
b. Rows with the single highest OrderQty among all products combined
c. Rows having maximum OrderQty per product
d. Rows where OrderQty is null

Q4. You run this query:

```
SELECT COUNT(*) AS Products,
    COUNT(DISTINCT ProductCategoryID) AS Categories,
    AVG(ListPrice) AS AveragePrice
FROM SalesLT.Product;
```

Suppose the SalesLT.Product table has 350 rows, but only 12 unique ProductCategoryID values, and some ListPrice values are NULL.
What result set pattern should you expect?

a. Products = 350, Categories = 12, AveragePrice = NULL
b. Products = 350, Categories = 350, AveragePrice = average of all rows including NULL
c. Products = 350, Categories = 12, AveragePrice = average of only non-NULL ListPrice values
d. Products = 350, Categories = 12, AveragePrice = average of all rows (NULLs treated as 0)

Q5. Which OOP principle is demonstrated by restricting access to a field and exposing it via a property in C#?

a. Inheritance
b. Polymorphism
c. Encapsulation
d. Abstraction

Section B: Theory (2 x 8 = 16 marks)

Q1. How can you sort results by multiple columns in a query?

Q2. What is the difference between SELECT ALL and SELECT DISTINCT?

Q3. How can the EXISTS predicate be used with subqueries?

Q4. What happens if you include a column in SELECT that is not in GROUP BY or an aggregate function?

Q5. Given two tables, Employee and SalesOrder, how would you write a query to list all employees and their sales orders, including employees with no sales orders?

Q6. Can you use column aliases in the GROUP BY clause? Why or why not?

Q7. Describe a scenario where a self-join would be necessary.

Q8. What is the result of the following query?

```
SELECT p.Name, c.Name
FROM Store.Product AS p
CROSS JOIN Store.Category AS c;
```