

# ■ Midterm Exam – Database Systems (Solutions)

## Part A – Short Questions

Schema vs Instance: Schema defines structure; Instance is actual data.

Normalization: Reduces redundancy and improves consistency.

Entity & Relationship: Entity is an object (e.g., Student), Relationship connects entities (e.g., Student enrolls in Course).

Three Levels: Internal, Conceptual, External.

## Part B – SQL Queries

```
SELECT * FROM Employee WHERE dept = 'Sales';  
SELECT name, salary FROM Employee WHERE salary > 30000;  
UPDATE Employee SET salary = salary * 1.10 WHERE dept = 'HR';  
SELECT * FROM Employee ORDER BY salary DESC;
```

## Part C – ER Model Description

Entities: Student, Course, Teacher

Relationships: Student registers for Course (M:N), Teacher teaches Course (1:M)