Assessment Task No. 3			
Topic:	**Predicate Logic**	Week No.	5
Course Code:	**CSST101**	Term:	1st Semester
Course Title:	**Advance Knowledge Representation and Reasoning**	Academic Year:	2025-2026
Student Name		Section	
Due date		Points	

Individual Case Study: Who Gets the Scholarship?

Scenario

The Dean's Office has rules:

1. If a student has **high grades**, is a **student leader**, and **applied**, then they are **Eligible**.
2. If a student is **Eligible**, then they get a **Scholarship**.
3. If a student has a **Scholarship**, then they receive **FinancialSupport**.

Facts:

- Juan: HighGrades, Applied.
- Maria: HighGrades, DidNotApply.
- Carlos: StudentLeader, NoHighGrades.
- Ana: HighGrades, StudentLeader, Applied.

Individual Student Tasks (each student submits their own work)

Each student answers all parts, but with **smaller questions** so it's manageable:

Part 1 – Unification (5 points)

Unify the rule Eligible(x) → Scholarship(x) with the fact Eligible(Ana).

👉 Write the substitution set.

Part 2 – Forward Chaining (10 points)

Starting from the facts, apply the rules step by step.

- List what new facts can be derived for **Juan** and **Ana**.
- Explain why **Maria** and **Carlos** are not eligible.

Part 3 – Backward Chaining (10 points)

Check these goals using backward chaining reasoning:

1. Goal: Scholarship(Maria)
2. Goal: FinancialSupport(Ana)

Write the reasoning steps (like: check facts → apply rule → check subgoals → conclusion).

Part 4 – Validity Check (5 points)

Fill in the truth table for the rule:

(HighGrades ∧ Leader ∧ Applied) → Eligible

Then test each student (Juan, Maria, Carlos, Ana).

Part 5 – Reflection (Bonus 5 points)

In 3–4 sentences, explain: *Why is logical reasoning important in AI and real-life decision making?*

Assessment Scheme (30 pts + 5 bonus)

- Part 1: Unification → 5 pts
- Part 2: Forward Chaining → 10 pts
- Part 3: Backward Chaining → 10 pts
- Part 4: Validity → 5 pts
- Bonus: Reflection → +5 pts