UCS1504 - Artificial Intelligence Lab

Department of CSE, SSN College of Engineering

7. Inference from Propositional Logic

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Write functions for the connectives of propositional logic and validate expressions.

Connectives: AND, OR, NOT, IMPLICATION, BI-CONDITIONAL

Expressions:

- is_tautology(expression): Read the input as Boolean expression and returns a Boolean value that indicates whether the expression is a tautology or not.

  Examples: (p ⇒ q) ∨ (q ⇒ p)

  p⇒(p∨q)

  ~p ⇒p

  ~p∧q ⇒ ~(p∨q)

- are_equivalent(expression1, expression2): receives two Boolean expressions as input and returns a Boolean value that indicates if the two expressions are logically equivalent.

  Examples: '~ a ∨ b' and 'a -> b'

  p ∨ ~p and p ∧ ~p

Note: Write the truth table of all connectives and sample expressions with all connectives for tautology and expressions validation.