Name: _____ **Date:** _____

Answer Key: Epistemic Gazes and Formal Fallacies: A College Logic Seminar

Synthesize complex deductive structures and evaluate nuanced informal fallacies through high-level propositional calculus and architectural argument mapping.

---

1. In the context of modal logic, if we define 'Necessity' (□P) as 'it is not possible for P to be false', which theorem best describes the relationship in a System K framework?

Answer: A) The Distribution Axiom: □(P → Q) → (□P → □Q)

The Kripkean Distribution Axiom (K) is the foundational principle for all normal modal logics, asserting that necessity distributes over the conditional.

2. True or False: According to the Quine-Duhem thesis, a single hypothesis cannot be isolated for falsification because it relies on a 'web of belief' including auxiliary assumptions.

Answer: A) True

Confirmation holism suggests that scientific theories are underdetermined by evidence, meaning we can always adjust auxiliary hypotheses to save a core theory from refutation.

3. Consider a case where a debater attacks the underlying motive of an opponent's funding source rather than the empirical data provided. This specific iteration of the genetic fallacy is best categorized as ____.

Answer: B) Circumstantial ad hominem

A circumstantial ad hominem specifically targets the respondent's interests or circumstances as a reason to dismiss their argument's validity.

4. Analyze the following syllogism: 'No nihilists are optimists. Some philosophers are optimists. Therefore, some philosophers are not nihilists.' Identify the valid mood and figure.

Answer: C) Festino (EIO-2)

The premises are E (Universal Negative) and I (Particular Affirmative), and the conclusion is O (Particular Negative). With the middle term as the predicate in both premises, it is Figure 2: Festino.

5. In Bayesian epistemology, when we update our prior probability (P(H)) in light of new evidence (E) to reach a posterior probability, we are applying the principle of ____.

Name: _____ **Date:** _____

Answer: A) Conditionalization

Conditionalization is the process of updating one’s degree of belief in a hypothesis as new evidence is acquired using Bayes' Rule.

6. True or False: Gödel's First Incompleteness Theorem demonstrates that in any sufficiently powerful recursive axiomatic system, there are true statements that cannot be proven within that system.

Answer: A) True

This theorem fundamentally limited the scope of formal logic by showing that consistency and completeness are mutually exclusive in complex systems.

7. When an interlocutor assumes that because the individual parts of a high-frequency trading algorithm are simple, the emergent behavior of the entire market system must also be simple, they commit the ___.

Answer: B) Fallacy of Composition

The fallacy of composition occurs when one infers that something is true of the whole from the fact that it is true of some part of the whole.

8. The logical operator commonly used to represent 'if and only if' situations, signifying that two statements are truth-functionally equivalent, is the ___.

Answer: C) Biconditional

A biconditional (material equivalence) is true only when both components have the same truth value.

9. True or False: In a Reductio ad Absurdum argument, one demonstrates the truth of a proposition by showing that its negation leads to a logical contradiction.

Answer: A) True

Reductio ad absurdum is a form of argument which attempts either to disprove a statement by showing it inevitably leads to a ridiculous or impractical conclusion.

10. Which heuristic, identified by Tversky and Kahneman, describes the tendency to estimate the probability of an event based on how easily similar instances come to mind, often skewing logical risk assessment?

Answer: C) Availability Heuristic

Name: _____ Date: _____

The availability heuristic is a mental shortcut that relies on immediate examples that come to a given person's mind when evaluating a specific topic or theme.