Name: _____ **Date:** _____

Answer Key: Think Like a Philosopher: Formal Logic and Epistemology Quiz for College

Metalogic, Bayesian synthesis, and predicate calculus—these 10 advanced problems require rigorous structural evaluation and the elimination of complex cognitive biases.

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1. In the context of the Problem of Induction, specifically concerning Nelson Goodman's 'New Riddle of Induction,' why does the predicate 'grue' challenge the validity of inductive inferences?

Answer: B) It suggests that any set of data can support an infinite number of mutually exclusive hypotheses depending on the choice of predicates.

Goodman's 'grue' paradox shows that inductive strength depends on 'projectible' predicates; without a criterion to choose between 'green' and 'grue,' induction cannot justify one prediction over the other.

2. In a system of Higher-Order Logic, a 'sound' argument must possess a valid structure AND all premises must be empirically verifiable through direct observation.

Answer: B) False

Soundness requires validity and that the premises are true; however, 'true' does not exclusively mean 'empirically verifiable,' as analytic truths or axioms can also be true.

3. The _____ fallacy occurs when an interlocutor assumes that because a specific property is true of the individual components of a system, it must necessarily be true of the system as a whole.

Answer: B) Fallacy of Composition

The Fallacy of Composition is the error of attributing a property of the parts to the whole (e.g., 'every atom in this cup is invisible, therefore the cup is invisible').

4. Consider the following scenario: A prosecutor argues that because fingerprints matching the defendant were found at the crime scene, it is highly probable he is guilty. However, the prosecutor fails to account for the total population size and the frequency of similar prints. This error is known as:

Answer: A) The Prosecutor's Fallacy (Base Rate Neglect)

Base Rate Neglect occurs when the conditional probability of guilt given evidence is confused with the probability of evidence given guilt, ignoring the underlying frequency of the trait in the general population.

5. In Propositional Logic, the rule of _____ allows one to conclude 'Q' from the premises 'P ’Q' and 'P'.

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Answer: C) Modus Ponens

Modus Ponens (affirming the antecedent) is the formal rule stating that if a conditional statement and its antecedent are both true, the consequent must follow.

6. Which of the following best describes the 'No True Scotsman' fallacy in an academic debate regarding political theory?

Answer: C) Arbitrarily excluding counter-examples to a generalization by redefining the criteria for membership in a group.

The 'No True Scotsman' fallacy involves protecting a universal generalization from a counter-example by changing the definition (ex post facto) to exclude the specific case.

7. In Bayesian epistemology, 'Prior Probability' refers to the updated belief in a hypothesis after new evidence has been integrated into the model.

Answer: B) False

Prior probability is the likelihood of a hypothesis BEFORE new evidence is considered; the updated belief is known as the 'Posterior Probability'.

8. An argument that concludes a claim is true simply because it has not yet been proven false relies on which fallacy?

Answer: A) Argumentum ad Ignorantiam

Argumentum ad Ignorantiam (Appeal to Ignorance) asserts that a proposition is true because of a lack of evidence to the contrary.

9. In the study of Rhetoric and Logic, the process of _____ involves reducing an opponent's argument to its simplest form to demonstrate that its logical conclusion leads to an impossibility or a contradiction.

Answer: B) Reductio ad Absurdum

Reductio ad Absurdum is a mode of argumentation that seeks to establish a contention by deriving an absurdity from its denial.

10. The 'Law of Non-Contradiction' states that contradictory propositions cannot both be true in the same sense at the same time.

Answer: A) True

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This is one of the three classical laws of thought. It asserts that 'A is B' and 'A is not B' are mutually exclusive.