

Practice First Examination

Note: The real first exam will have the following format, with a few more or a few less problems in each section. I may reallocate point values among the various sections. See further notes below.

Part A. Symbolization (20 points) Symbolize the following sentences using the symbolization scheme below.

A: Anita wants to be a millionaire.

B: Bradley won \$10,000.

C: The capital of Burkina Faso is Ouagadougou.

E: Eve won \$10,000.

H: The one hundred dollar question is “Who is buried in Grant’s tomb?”

M: The Mossi Empire’s capital was Ouagadougou.

1. Anita wants to be a millionaire only if the one hundred dollar question is “Who is buried in Grant’s tomb?”
2. Neither Eva nor Bradley won \$10,000.
3. If Ougadougou is the capital of both Burkina Fasso and the Mossi Empire, then Eva and Bradley did not both win \$10,000.

Part B. Translation (10 points) Translate the following symbolic sentence into idiomatic English, using the scheme of symbolization provided above.

4. $(C \rightarrow B) \rightarrow (\sim E \ \& \ \sim H)$

Exam continues on the next page

Part C. Truth Table Problems (30 points)

9. Truth-functional consistency
- (a) State whether the following set of sentences is truth-functionally consistent.
 - (b) Provide a **complete** truth table (with our standardized arrangement of truth values and rows) that will help justify your claim.
 - (c) State clearly **why** your truth table justifies your claim in (a).

$D \ \& \ \sim(T \rightarrow F), \ D \rightarrow F$

10. Validity
- (a) State whether the argument is valid.
 - (b) Provide a **complete** truth table that will help justify your claim.
 - (c) State clearly **why** your truth table justifies your claim in (a).

$(Q \vee R) \rightarrow S. \ (S \vee Q) \rightarrow R. \ \therefore R \leftrightarrow S.$

Note: I may instead have a problem concerning the equivalence of two sentences, rather than a question about validity or a question about consistency.

Part D. Derivations (40 points)

Provide derivations showing that the following arguments are valid.

(Note: You will get more points for a derivation that is unfinished but correct as far as it goes than for one that is finished but misuses the rules. You will get some points for starting a derivation in a promising direction, even if you do not finish it.)

11. $\sim L \vee K. \ X \leftrightarrow \sim L. \ \sim X \ \therefore \sim K \rightarrow V$

12. $(\sim O \ \& \ N) \rightarrow (R \vee O). \ R \leftrightarrow \sim N. \ \therefore \sim O \rightarrow (N \rightarrow P)$