

CNT 4419 Quiz 2/12/25 (20 minutes) NAME: \_\_\_\_\_

Instructions: Same standard instructions as before. As always, this quiz is closed everything, including phones and other students. Do not talk to another student during the quiz. Do not look at another student's answers during the quiz. Respond at the level of detail discussed in class.

1. [1 point] Summarize the Curry-Howard Isomorphism. [1 sentence]

2. [3 points] Prove that a set of "good" traces uniquely identifies a property.

Theorem: For all policies  $P_1$  and  $P_2$  and all sets of traces  $G$ , if (a)  $P_1$  is a property with "good" trace set  $G$ , and (b)  $P_2$  is a property with "good" trace set  $G$ , then  $P_1=P_2$ .

3. [6 points] Prove or disprove that the following security policy  $P$  can be written as the intersection of a safety property and a liveness property. For full credit, a *proof* needs to include formal definitions of safety and liveness properties that intersect to form  $P$ . For full credit, a *disproof* needs to show the impossibility of such properties existing.

$P = \{\emptyset, \{\text{read}(0); \text{write}(0)\}\}$