This assignment is due Thursday, April 3. If you work in a group, list your group members at the top of your submitted work.

**Analogy & Carnapian Logical Probability**

I. Restricted to the language $L_Q^{2,2}$ containing two predicates $F$ and $G$ and two constants $a$ and $b$, prove the following claims concerning "analogue effects" for Carnap's two logical probability functions $m^\dagger$ and $m^\ast$. It would be useful to write down a stochastic truth-table for both $m^\dagger$ and $m^\ast$ over $L_Q^{2,2}$ as part of your answer.

1. Pr$^\dagger(Gb \mid Ga) = Pr^\dagger(Gb \mid Fa \& Ga \& Fb)$
2. Pr$^\dagger(Gb \mid Ga) = Pr^\dagger(Gb \mid Fa \& Ga \& \neg Fb)$
3. Pr$^\dagger(Gb \mid Ga) = m^\dagger(Gb)$
4. Pr$^\ast(Gb \mid Fa \& Ga \& Fb) > Pr^\ast(Gb \mid Ga)$
5. Pr$^\ast(Gb \mid Ga) > Pr^\ast(Gb \mid Fa \& Ga \& \neg Fb)$
6. Pr$^\ast(Gb \mid Fa \& Ga \& \neg Fb) = m^\ast(Gb)$

II. Explain why Carnap thought facts like #3 above ruled out $m^\dagger$ as the logical probability function. And, explain why Carnap thought facts like #6 above ruled out $m^\ast$ as the logical probability function.

III. Consider the language $L_Q^{2,3}$ containing three predicates $F$, $G$, and $H$ and two constants $a$ and $b$. Write down a stochastic truth-table for $m^\ast$ over $L_Q^{2,3}$, and prove the following three claims concerning "analogue effects". [Hint: there are 64 state descriptions and 36 structure descriptions in $L_Q^{2,3}$.]

7. Pr$^\ast(Hb \mid Ha) > Pr^\ast(Hb \mid Fa \& Ga \& Ha \& Fb \& \neg Gb)$
8. Pr$^\ast(Hb \mid Fa \& Ga \& Ha \& Fb \& \neg Gb) = Pr^\ast(Hb \mid Fa \& Ga \& Ha \& \neg Fb \& \neg Gb)$
9. Pr$^\ast(Hb \mid Fa \& Ga \& Ha \& \neg Fb \& \neg Gb) = m^\ast(Hb)$