

Take-Home Mid-Term

Philosophy 12A
March 4, 2010

The take-home part of the mid-term examination consists of the the problem on this handout. The take-home exam is **due on Thursday, March 11, 2010**. There will be an opportunity to resubmit on March 18th. This is to be treated just like a (perhaps somewhat more difficult!) homework (*e.g.*, group work, *etc.*, is encouraged).

1 Problem #1

The following collection of seven (7) sentences concerns five (5) individuals — Gary, Harrison, Iola, Jessica, and Keno — and whether they did or did not attend a certain meeting. These sentences imply, by logic alone (*i.e.*, by the semantics or rules of LSL alone), a specific conclusion as to who attended and who didn't.

- ① Exactly two of Gary, Harrison, and Jessica attended.
- ② Keno attended only if Harrison attended.
- ③ Either both Harrison and Keno attended, or Harrison did not attend.
- ④ If Harrison attended, then neither Gary nor Iola attended.
- ⑤ At least one of Jessica and Gary attended.
- ⑥ Jessica attended if and only if Keno was absent.
- ⑦ If either Jessica was absent only if Keno attended, or Harrison attended, then Iola was absent.

You are to do the following three things:

1. Translate the premises ① - ⑦ from English into LSL, using the following dictionary:

G: Gary attended.

H: Harrison attended.

I: Iola attended.

J: Jessica attended.

K: Keno attended.

2. State your (five) conclusions as to who attended and who didn't. That is, state which of G , $\sim G$ follows from ① - ⑦, and which of H , $\sim H$ follows from ① - ⑦, *and so on* for each of the five atoms.
3. Prove the five conclusions, stated in (2), from the premises formulated in (1), by *either*: (a) using any legitimate truth-table method(s), (b) generating natural deduction proofs of your conclusions, *or* (c) reasoning using a *combination* of truth-table and natural deduction techniques. That is, you may use a truth-table method to show that G (or $\sim G$, as the case may be) follows from ① - ⑦, but a natural deduction proof to show that H (or $\sim H$, as the case may be) follows from ① - ⑦. The important thing is that your LSL reasoning about the attendance or non-attendance of each person is both clear and correct. For each of your five goals, you should only submit *one* solution (either a truth-table or a natural deduction proof, *but not both*).

Extra Credit for Problem #1. Three (3) extra credit points will be awarded to you for each of the five parts that you solve (or try to solve!) using a natural deduction proof. This means you could earn up to 15 extra credit points, if you try to solve *all five* parts of Problem #1 using natural deduction proofs rather than truth table techniques.