

CS3234 Logic and Formal Systems

Assignment 01: Traditional Logic

Submission on A-4 paper (use as many sheets as you want), to the box next to COM2, 03-51. Staple or tie your sheets together and write your name and matriculation number on the top of the front page.

Latest submission: Thursday, 26/9/10, 11:00am.

1. (4 marks) Consider Notes 1, Example 4. Give a model in which the following categorical proposition holds.

All belowfour are even

2. (Exercise 1; 3 marks) Is the proposition

All humans are humans

valid? Use the semantics of categorical propositions in your argument.

3. (Exercise 2; 3 marks) Is the proposition

Some humans are humans

valid? Use the semantics of categorical propositions in your argument.

4. (Exercise 3; 10 marks) Use Venn diagrams and the definitions in Section 4 to argue why Axioms 4 and 5 are valid.

5. (Exercise 4; 10 marks) Use contraposition to prove

All (non animals) are (non cats)

using **All cats are animals** as axiom. Give your proof in graphical and text-based notation.

6. (Exercise 9; 10 marks) From the following premises

- All babies are illogical.
- Nobody is despised who can manage a crocodile.
- Illogical persons are dispised.

prove that no babies can manage a crocodile. Write the proof in text-based notation.

7. (Exercise 15; 3 marks) How many Figure 1 syllogisms (valid or not) exist?