

Philosophy 500 — Practice final, June 10

Instructions:

1. You have 3 hours and 15 minutes for this exam. If you have time, I recommend checking all your answers carefully, or even doing it over again and comparing the two.
2. Answer **all** questions in the answer booklet and write your name on the front. A perfect score on this test is 100 points.
4. You should assume the following key for sections A and B of the exam:

UD: all animals	Tx: x is a tiger	Lxyz: x likes y better than z
a: Alyssa	Bx: x is a bird.	Axy: x is afraid of y.
b: Brad	Fx: x has feathers.	Cxy: x is cuter than y.
e: Ella	Hx: x has hair.	Sxy: x has sniffed y.

A. Quantifier logic syntax: For each of the following, write ‘S’ if it’s both a proper sentence and a proper formula, ‘F’ if it’s a proper formula but not a proper sentence, and ‘N’ if it’s neither a proper formula or a proper sentence. (10 points).

1. $\forall x(Cxa \rightarrow \neg Lyex)$
2. $\neg \exists b(Tb \ \& \ \forall y(Layb))$
3. $\forall y(Ty \ \& \ Ayx \rightarrow Say)$
4. $\neg \exists x[(Abx \vee Hx) \ \& \ \forall z(Lzbx)]$
5. $Bx \ \& \ \forall x(Ax \rightarrow Fx)$
6. $\forall y(Ayy \rightarrow \neg \exists x(Lxye \vee Sbx)) \vee Aae$
7. $Fx \rightarrow Te$
8. $\forall y[(Cay \vee y) \rightarrow Hx]$
9. $\exists x(\neg x = a \ \& \ (Fx \vee Aex))$
10. $\forall y((Hy \ \& \ Ty) \rightarrow y = (e \ \& \ b))$

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B. Quantifier logic translations: Translate each of the following using the key given. (48 pts).

1. Unless Brad is a tiger without feathers, he hasn't sniffed any birds.
2. Some hairy tiger is cuter than every animal which sniffed it.
3. There's exactly one tiger with feathers, and it's afraid of Alyssa.
4. Ella likes any animal she's cuter than better than any animal who's cuter than her.
5. No animal other than Alyssa has sniffed Ella.
6. If any animal with feathers also has hair, every other animal is afraid of it.
7. Only tigers with feathers are cuter than both Brad and Ella.
8. Not every bird has sniffed at least one hairy animal who's afraid of every tiger.

C. Relating logical concepts: For each of the following, state whether it's true or false, and either explain **in full detail** why it's true or give an example to show that it's false. **Note:** If you give an example which works, you will get full credit. On the other hand, if you give an example that doesn't work, it might be good to have something written about it to help me know what had in mind when I'm assigning any partial credit (also: trying to explain why it works might help you realize it doesn't work). (42 points).

1. If $A \therefore B$ is valid, and $\{B, C\}$ is inconsistent, then $A \therefore C$ is invalid.
2. If all of an argument's premises are tautologies, but its conclusion isn't, the argument is invalid.
3. If an argument is sound and its conclusion is a tautology, its premises are also tautologies.
4. If $A \vee B$ is a tautology, then $\{A, B\}$ is consistent.
5. If $A \rightarrow B$ is true, then $A \therefore B$ is a valid argument.
6. If $\{A, B\}$ is an inconsistent set, then the argument $A \therefore B$ can't be sound.

Good luck!