

Philosophy 500 — Practice midterm, May 20

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.
3. When doing truth tables, make sure your T's are clearly T's and your F's clearly F's. Do not try to turn a T into an F or viceversa, because the result is usually ambiguous and I'll mark it as wrong.
4. When doing truth tables, you must do a complete table if it asks for it. Otherwise, you can do a partial truth table, as long as it shows what you were asked to show. However, truth tables must only have rows which make sense when you look at them, so it's a good idea to figure out the whole line (e.g. in the back of the answer booklet) before writing it in as your answer.

A. 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). (40 points).

1. If the set $\{A \vee B, C\}$ is inconsistent, the argument $C \ \& \ A \therefore B$ is valid.
2. If A and $B \ \& \ C$ are logically equivalent, then $\{A, B\}$ is consistent.
3. If $A \rightarrow B$ is a contradiction, then A is a tautology.
4. If $A \vee B$ is contingent, then so is $A \leftrightarrow B$.
5. If the argument $A, B \therefore C$ is valid, so is $A \therefore B \rightarrow C$.

B. Translations: Convert each of the following sentences into symbolic form, preserving its logical structure, using the key given below (15 points).

A: Anna is a pilot.

B: Brock is a pilot.

C: Corrina likes driving.

D: Daisy likes driving.

1. Brock is a pilot only if Anna is, but he's not a pilot unless Daisy likes driving.
2. Corrina and Daisy don't both like driving, but one of them does.
3. Either Brock isn't a pilot, or it's not the case that both Corrina and Daisy like driving.
4. Corrina likes driving if neither Anna nor Brock is a pilot.
5. Unless Corrina likes driving, either Anna is a pilot but Brock isn't, or Daisy doesn't like driving.

C. Tree diagrams: Draw a tree diagram for each of the following which are proper sentences. For those which aren't proper sentences, write 'Gibberish' instead. (15 points).

1. $\neg(A \ \& \ \neg(B \rightarrow C))$
2. $B \leftrightarrow \neg(B \vee \neg C)$
3. $A \rightarrow (C \neg \ \& \ A)$
4. $(A \ \& \ B) \ \& \ C \vee B$
5. $\neg A \ \& \ (\neg \neg C \rightarrow D)$

D. Applying truth tables: Answer each of the following, showing your answer is right by means of a truth table (partial or complete, but I recommend avoiding doing a complete table unless it's necessary) (30 points).

1. Is the set $\{A \rightarrow \neg B, B \rightarrow C, A \& C\}$ consistent?
2. Is the argument $A \rightarrow (A \& \neg B), \neg B \rightarrow \neg A \therefore \neg(A \vee \neg B)$ valid?
3. Are the sentences $A \leftrightarrow (B \rightarrow A)$ and $(B \vee A) \& \neg(A \& \neg B)$ logically equivalent?
4. Is the sentence $[A \rightarrow (B \vee C)] \leftrightarrow [\neg B \rightarrow (C \& A)]$ a tautology, a contradiction, or contingent?
5. Is the argument $B \leftrightarrow (A \vee \neg B), A \rightarrow \neg A \therefore A \& B$ valid?

Good luck!