Midterm Practice

Philosophy 109

Read all directions carefully!

1 Concepts

The format of this exam section will be True/False. Know the definition and relationships of the following terms:

1. Statement
2. Argument
3. Validity
4. Soundness
5. Logical Truth
6. Logical Falsehood
7. Contingent statement
8. Equivalent
9. Contradictory
10. Consistent
11. Inconsistent

2 Translation

Translate the following sentences in TFL (Make sure to make any negations explicit in the TFL !). Additional practice: Hardegree, Chapter 4.

1. Amy is a doctor and likes chicken but not hamburgers.
2. Jones and Smith are both smart, but neither gets good grades.
3. If Smith doesn't win, then Jones will win unless he gets injured.
4. I will graduate, provided I pass both logic and English.
5. Only if my room could use a good cleaning, I am too lazy to do anything about it.
6. If driving too fast is hazardous to your health, then so is driving without buckling up.

7. If your phone breaks, then I will get you a new one for your birthday, or you can see about getting it fixed.

8. It is not the case that if you eat a lot of salads, then you will absorb a lot of vitamins, and it is not the case that if you will absorb a lot of vitamins, then you will eat a lot of salads.

3 Truth Tables

Use **full** truth tables to answer the following questions. **NOTE: not all the questions ask the same kind of thing!** Additional Practice: Hardegree, Chapters 2 and 3.

1. Determine whether the following sentence is a logical truth, a logical falsehood, or contingent: $\neg(R \wedge \neg R) \rightarrow \neg(S \vee \neg S)$.

2. Determine whether the following sentence is a logical truth, a logical falsehood, or contingent: $(P \vee (Q \wedge R)) \vee \neg S$.

3. Use a joint truth table to compare the following two sentences in order to determine whether they are equivalent, contradictory, consistent or inconsistent:

   (a) $P \leftrightarrow Q$

   (b) $(P \rightarrow Q) \vee (\neg Q \rightarrow \neg P)$

4. Use a joint truth table to compare the following two sentences in order to determine whether they are equivalent, contradictory, consistent or inconsistent:

   (a) $(Q \rightarrow \neg R) \rightarrow S$

   (b) $S \leftrightarrow (Q \wedge R)$

5. Use a joint truth table to evaluate the following argument for validity. If it is invalid, point out which row(s) invalidate it.

   P1 $((S \wedge Q) \wedge R) \rightarrow Q$

   P2 Q

   P3 R

   C $\neg S$

6. Use a joint truth table to evaluate the following argument for validity. If it is invalid, point out which row(s) invalidate it.

   P1 $P \rightarrow (Q \vee \neg R)$

   P2 $Q \rightarrow \neg R$

   C $P \rightarrow \neg R$

4 Short Truth Tables

Use the short truth table method to determine whether the following argument is valid. If it is valid, make sure you show every case (each possible way the premises can be true and the conclusion false).

1. P1 $(R \vee Q) \rightarrow \neg S$
   P2 $Q \vee S$
   C R

2. P1 $\neg(P \vee Q) \vee \neg(R \wedge S)$
   P2 $P \wedge Q$
   P3 R
   C S

3. P1 $\neg(\neg R \vee \neg Q) \rightarrow \neg S$
   P2 $Q \rightarrow S$
   C $\neg R \rightarrow S$