Assignment No. 9

Due: 13:15 on Thursday 19 March 2015 via email

There is no word limit/requirement for these exercises. Your responses may be in English, French, Spanish, German, Arabic, or any other language you are comfortable writing in. The grammar, spelling, and prescriptive conventions are not evaluated for the assignment. You do not need to edit, revise a number of times, or attend in any special way to form or language. You should just write in a way that is clear to you. You are welcome to use bullet points. You do not need to write complete sentences or in paragraph form complete with transitions.

Homework should be submitted by 15:15 on the day it is due. There is no late homework accepted. All written assignments must be typed using 12 pt Times New Roman or 11 pt Arial font with 1" margins. All assignments must be send in one of the following formats: .doc, .docx, .txt, .tex, .pdf, .rtf, .odt, .dot. Remember to cite all sources and use APA guidelines. Homework must also include your name, class, date, and assignment.

1   Translate to Prose

Memorize the following expressions. Translate the following statements to English prose.

1. $[[\neg\phi]] = 1$ iff $[[\phi]] = 0$

2. $[[\phi \wedge \psi]] = 1$ iff $[[\phi]] = [[\psi]] = 1$

3. $[[\phi \vee \psi]] = 1$ iff $[[\phi]] = 1$ or $[[\psi]] = 1$

4. $[[\phi \rightarrow \psi]] = 1$ iff $[[\phi]] = 0$ or $[[\psi]] = 1$

5. $[[\phi \leftrightarrow \psi]] = 1$ iff $[[\phi]] = [[\psi]]$

2   Truth Tables

Draw truth tables for the following. Describe the state of the world for each line of the truth table like we did in class. Assign a meaning to each proposition (e.g. $\rho=$'Christen is tired" so that $\neg\rho$ is true when *Christen is not tired* and $\neg\rho$ is false when *Christen is indeed tired*) when describing the state of the world for each row of the truth table.

1. $\neg\phi$

2. $\phi \vee \psi$

3. $\phi \wedge \psi$

4. $\phi \rightarrow \psi$

5. $\phi \leftrightarrow \psi$

Draw truth tables for the following. If the last expression seems too complicated, make it simpler by starting with columns for its subparts. For example, begin with a column for ϕ and another one for ψ (4 rows), then create a column for $\neg\phi$ (call this column 3). Now you can create a column for $(\phi \vee \psi)$, and a column for $(\neg\phi \wedge \psi)$, using column 3 in conjunction with ψ. You can now create a final column that relates the last two with the biconditional $\leftrightarrow$. Assign a meaning to each proposition (e.g. $\rho=$'Christen is tired" so that $\neg\rho$ is true when *Christen is not tired* and $\neg\rho$ is false when *Christen is indeed tired*) when describing the state of the world for each row of the truth table.

6. $(\phi \vee \neg\phi)$

7. $(\phi \wedge \neg\phi)$

8. $(\phi \vee \psi) \leftrightarrow (\neg\phi \wedge \psi)$.