

TFL to English Exercise

PHI 154 (Eliot) Fall 2023

Use the following symbolization key to render natural English versions of each of the numbered truth-functional logic (TFL) sentences. Try to preserve the logical structure of each sentence as you render it in English, but also make it sound natural. For example, if at first you were to interpret a TFL sentence like “ $\neg H \rightarrow V$ ” with the “logic-ese” sentence “If it is not the case that Ana is home, Ana is on vacation,” you could render that more naturally as “If Ana is not home, she is on vacation.” Similarly, consider whether alternative renderings like “but” for a conjunction or “only if” for a conditional give the English sentence a more sensible meaning. Also, if you would like to type your answers, that’s fine.

G = The defendant is guilty.

F = The defendant forged a document.

C = The defendant should be charged.

P = The defendant should pay a fine.

J = The defendant should go to jail.

O = The defendant obeyed the law.

(note: You may use the pronoun “he” for this defendant where pronouns seem useful.)

1. $O \wedge \neg G$
2. $F \wedge (G \wedge C)$
3. $F \wedge (P \vee J)$
4. $G \rightarrow C$
5. $\neg G \rightarrow \neg C$
6. $C \rightarrow G$
7. $C \leftrightarrow G$
8. $F \rightarrow (G \wedge P)$
9. $(F \wedge G) \rightarrow (P \wedge J)$
10. $(F \vee \neg F) \rightarrow C$
11. $O \leftrightarrow (\neg F \wedge \neg G)$
12. $\neg(P \vee J)$
13. $\neg P \wedge \neg J$
14. $\neg(P \wedge J)$
15. $(P \wedge J) \leftrightarrow G$
16. $\neg O \rightarrow (G \rightarrow P)$
17. $F \rightarrow (C \leftrightarrow \neg O)$
18. $(G \rightarrow P) \wedge (\neg G \rightarrow \neg P)$
19. $\neg J \leftrightarrow \neg G$
20. $(J \vee P) \leftrightarrow (F \wedge \neg O)$