Chapter 10: Translation Answers and Comments

Translations for Chapter 10 exercises

#1
1. F ⊃ (C ⊃ ~R)
2. F ⊃ C
3. F ⊢ ~R

You must know how to translate "provided that" to get the first premise right.

#2
1. J • A
2. A ⊃ (J ⊃ S) ⊢ S

The phrase "for the following reasons" tells us that the first statement is the conclusion and the remaining sentences are premises.

#3
1. S ⊃ P
2. (P ⊃ I) • (I ⊃ E) ⊢ S ⊃ E

Again #17 in the dictionary is the key guide for getting the first part of the second premise correct. The comma shows that 'and' is the major connective in the second premise.

#4
1. T ⊃ (~D ⊃ E)
2. T
3. ~E ⊢ D

#5
1. (A v K) • ~(A • K)
2. A ⊢ ~K

#6
1. F v R
2. R ⊃ D
3. ~D
4. \( F \supset M \) \( /: \) \( M \)

The phrase "This proves that" indicates the conclusion.

#7

1. \( C \)
2. \((C \cdot T) \supset \sim T\)
3. \((C \cdot \sim T) \supset T \) \( /: \) \( T \equiv \sim T \)

#8

1. \( N \supset R \)
2. \( O \equiv R \)
3. \((O \supset R) \supset L \) \( /: \) \( (N \supset O) \cdot L \)

#9

1. \((\sim A \lor \sim C) \supset P \)
2. \( \sim P \) \( /: \) \( A \cdot C \)

#10

1. \( \sim F \cdot C \) \( /: \) \( \sim (C \supset F) \)

A short, but tricky proof. Hint: see the section in Chapter 10 on Working Backwards.

#11

1. \( I \supset (B \equiv M) \)
2. \( B \)
3. \( M \supset T \)
4. \( \sim T \) \( /: \) \( \sim I \)

The consequent of the first premise could also be:
\[ [(B \supset M) \cdot (M \supset B)] \]

But note that by the Equivalence rule, this is logically the same as \( B \equiv M \).

#12

1. \((G \supset W) \cdot (P \supset A)\)
2. \((W \cdot A) \supset \sim E\)
3. \(E\) \(/\vdash \sim (P \cdot G)\)

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2. \((W \cdot A) \supset \sim E\)
3. \(E\)
4. \(G\) \(/\vdash \sim A \cdot \sim P\)

#13

1. \(P \vee \sim L\)
2. \(P \supset H\) \(/\vdash (P \cdot H) \vee \sim L\)

#14

1. \(C \supset (D \vee P)\)
2. \((L \supset \sim T) \cdot [\sim T \supset (D \vee P)]\)
3. \((C \vee L) \vee S\) \(/\vdash (\sim D \cdot \sim P) \supset S\)

The conclusion is difficult to translate. Here is an example where 'or' means 'and,' and the phrase "the only way" means a necessary condition. So, what the sentence is saying is "If you don't want a slow, painful death AND you don't want to be a slave to pain the rest of your life, then you should commit suicide."

#15

1. \(H \vee S\)
2. \((H \supset \sim W) \cdot [S \supset (G \vee \sim G)]\)
3. \((G \supset \sim W) \cdot [\sim G \supset (A \vee B)]\)
4. \((A \supset \sim W) \cdot (B \supset \sim T)\) \(/\vdash \sim W \vee \sim T\)

Notice that the phrase "you have two things to worry about" is not translated. For instance, the second half of the first premise reads: "if you are sick, then you worry about getting well or not getting well."

#16

1. \(H \supset (\sim R \supset C)\)
2. \(\sim H \supset (R \supset L)\)
3. \(L \supset (S \cdot E)\)
4. \(\sim C \cdot \sim H\) \(/\vdash (H \supset R) \cdot (R \supset S)\)
#17
1. (~C v K) • (~K ≡ S)
2. ~S ⊃ ~K
3. K ⊃ (C ⊃ ~S) /·: (K v ~K) ⊃ ~C

#18
1. (D ⊃ ~R) • (F ⊃ ~M)
   /·: (D v F) ⊃ (~R v ~M)

#19
1. {{{[[W • (E • S)] • (~T • ~A)] • [(I • U) • M]]} • C} ⊃ A
2. ~A
   /·: ~C v {{{[~W v (~E v ~S)] v (T v A)} v [(~I v ~U) v ~M]}}

#20
1. ~O ≡ ~F
2. ~(O v F) ⊃ ~C /·: (~O v ~F) ⊃ ~C