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 ∨ K) • ~ (A • K)  
2. A /.: ~K

#6
1. F v R
2. R ⊃ D
3. ~D
4. F ⊃ M /∴ M

The phrase "This proves that" indicates the conclusion.

#7

1. C
2. (C • T) ⊃ ~T
3. (C • ~T) ⊃ T /∴ T ≡ ~T

#8

1. N ⊃ R
2. O ≡ R
3. (O ⊃ R) ⊃ L /∴ (N ⊃ O) • L

#9

1. (~A v ~C) ⊃ P
2. ~P /∴ A • C

#10

1. ~F • C /∴ ~(C ⊃ F)

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

#11

1. I ⊃ (B ≡ M)
2. B
3. M ⊃ T
4. ~T /∴ ~I

The consequent of the first premise could also be:
[(B ⊃ M) • (M ⊃ B)]

But note that by the Equivalence rule, this is logically the same as B ≡ M.
#12

$$1. (G \Rightarrow W) \cdot (P \Rightarrow A)$$
$$2. (W \cdot A) \Rightarrow \sim E$$
$$3. E \quad /.: \sim (P \cdot G)$$

$$1. (G \Rightarrow W) \cdot (P \Rightarrow A)$$
$$2. (W \cdot A) \Rightarrow \sim E$$
$$3. E$$
$$4. G \quad /.: \sim A \cdot \sim P$$

#13

$$1. P \vee \sim L$$
$$2. P \Rightarrow H \quad /.: (P \cdot H) \vee \sim L$$

#14

$$1. C \Rightarrow (D \vee P)$$
$$2. (L \Rightarrow \sim T) \cdot [\sim T \Rightarrow (D \vee P)]$$
$$3. (C \vee L) \vee S \quad /.: (\sim D \cdot \sim P) \Rightarrow S$$

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

$$1. H \vee S$$
$$2. (H \Rightarrow \sim W) \cdot [S \Rightarrow (G \vee \sim G)]$$
$$3. (G \Rightarrow \sim W) \cdot [\sim G \Rightarrow (A \vee B)]$$
$$4. (A \Rightarrow \sim W) \cdot (B \Rightarrow \sim T) \quad /.: \sim W \vee \sim T$$

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."
1. \( H \supset (\sim R \supset C) \)
2. \( \sim H \supset (R \supset L) \)
3. \( L \supset (S \bullet E) \)
4. \( \sim C \bullet \sim R \quad /: (H \supset R) \bullet (R \supset S) \)

#17

1. \( (\sim C \lor K) \bullet (\sim K \equiv S) \)
2. \( \sim S \supset \sim K \)
3. \( K \supset (C \supset \sim S) \quad /: (K \lor \sim K) \supset \sim C \)

#18

1. \( (D \supset \sim R) \bullet (F \supset \sim M) \)
   \( /: (D \lor F) \supset (\sim R \lor \sim M) \)

#19

1. \( \{\{[W \bullet (E \bullet S)] \bullet (\sim T \bullet \sim A)\} \bullet ([I \bullet U] \bullet M)\}\} \bullet C \supset A \)
2. \( \sim A \quad /: \sim C \lor \{\{[\sim W \lor (\sim E \lor \sim S)] \lor (T \lor A)\} \lor ([\sim I \lor \sim U] \lor \sim M)\}\}

#20

1. \( \sim O \equiv \sim F \)
2. \( \sim (O \lor F) \supset \sim C \quad /: (\sim O \lor \sim F) \supset \sim C \)