

Introduction to Logical Reasoning

Workshop on Natural Deduction

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Part I, Problem 1 Solution

1. $(W \vee X) \rightarrow Y.$

2. $W.$

$\therefore Y.$

3. $W \vee X.$ 2; Add.

4. $Y.$ 1, 3; M.P.

Part I, Problem 2 Solution

1. $D \rightarrow E$.

2. $(E \rightarrow F) \& (F \rightarrow D)$.

$\therefore D \rightarrow F$.

3. $E \rightarrow F$.

2; Simp.

4. $D \rightarrow F$.

1, 3; H.S.

Part 2, Problem 1 Solution

1. $Q \rightarrow R$.

2. $R \rightarrow S$.

3. $\sim S$.

$\therefore \sim Q \& \sim R$.

4. $\sim R$.

2, 3; M.T.

5. $\sim Q$

1, 4; M.T.

6. $\sim Q \& \sim R$.

5, 4; Conj.

Part 3, Problem 1 Solution

1. $L \vee (S \rightarrow Q)$.

2. $\sim L \rightarrow (Q \rightarrow U)$.

3. $\sim L$.

$\therefore S \rightarrow U$.

4. $S \rightarrow Q$.

1, 3; D.S.

5. $Q \rightarrow U$.

2, 3; M.P.

6. $S \rightarrow U$.

4, 5; H.S.

Part 3, Problem 2 Solution

1. $J \rightarrow B$.

2. $(J \& B) \rightarrow (C \vee M)$.

3. $(C \vee M) \rightarrow \sim S$.

4. $(J \rightarrow \sim S) \rightarrow P$.

$\therefore P$.

5. $J \rightarrow (J \& B)$.

1; Abs.

6. $J \rightarrow (C \vee M)$.

5, 2; H.S.

7. $J \rightarrow \sim S$.

6, 3; H.S.

8. P .

4, 7; M.P.

Next Class...

Enjoy your Eid!

When you come back, we will do further work with natural deduction.