

Section A:

- [1] 1. $\sim(P \cdot S)$
 2. $\sim R$
 3. $\sim P \supset [P \vee (Q \supset R)]$
 4. $P \supset (P \cdot S)$ / $\sim Q$
 5. $\sim P$ 1, 4, MT
 6. $P \vee (Q \supset R)$ 3, 5, MP
 7. $Q \supset R$ 5, 6, DS
 8. $\sim Q$ 2, 7, MT
- [2] 1. $P \vee (Q \supset R)$
 2. $(S \vee L) \supset (Q \cdot M)$
 3. $Q \supset \sim P$
 4. $S \cdot N$ / R
 5. S 4, Simp
 6. $S \vee L$ 5, Add
 7. $Q \cdot M$ 2, 6, MP
 8. Q 7, Simp
 9. $\sim P$ 3, 8, MP
 10. $Q \supset R$ 1, 9, DS
 11. R 8, 10, MP
- [3] 1. $(Q \cdot R) \vee \sim P$
 2. $R \supset S$
 3. $[\sim P \cdot \sim(Q \cdot R)] \supset (L \supset \sim Q)$
 4. $\sim(Q \cdot R) \supset (\sim Q \supset R)$
 5. $\sim(Q \cdot R) \cdot \sim M$ / $L \supset S$
 6. $\sim(Q \cdot R)$ 5, Simp
 7. $\sim P$ 1, 6, DS
 8. $\sim P \cdot \sim(Q \cdot R)$ 6, 7, Conj
 9. $L \supset \sim Q$ 3, 8, MP
 10. $\sim Q \supset R$ 4, 6, MP
 11. $L \supset R$ 9, 10, HS
 12. $L \supset S$ 2, 11, HS
- [4] 1. $E \cdot \sim B$
 2. $C \supset B$
 3. $A \supset H$
 4. $E \supset (C \vee A)$ / $B \vee H$
 5. E 1, Simp
 6. $C \vee A$ 4, 5, MP
 7. $B \vee H$ 6, 2, 3 CD

Section B:

- [1] 1. $S \supset (Q \cdot M)$
2. $S \vee (P \cdot L)$
3. $P \supset (Q \cdot R)$ / $Q \cdot (M \vee R)$
4. $(S \vee P) \cdot (S \vee L)$ 2, Dist
5. $S \vee P$ 4, Simp
6. $(Q \cdot M) \vee (Q \cdot R)$ 5, 1,3, CD
7. $Q \cdot (M \vee R)$ 6, Dist

- [2] 1. $\sim P$
2. $(P \cdot Q) \vee (R \cdot S)$ / $\sim (P \vee \sim R)$
3. $\sim P \vee \sim Q$ 1, Add
4. $\sim (P \cdot Q)$ 3, DM
5. $R \cdot S$ 2, 4, DS
6. R 5, Simp
7. $\sim \sim R$ 6, DN
8. $\sim P \cdot \sim \sim R$ 1, 7, Conj
9. $\sim (P \vee \sim R)$ 8, DM

- [3] 1. $(P \vee Q) \supset R$
2. $\sim R$
3. $\sim S \supset (Q \vee R)$ / S
4. $\sim (P \vee Q)$ 1, 2, MT
5. $\sim P \cdot \sim Q$ 4, DM
6. $\sim Q$ 5, Simp
7. $\sim Q \cdot \sim R$ 2, 6, Conj
8. $\sim (Q \vee R)$ 7, DM
9. $\sim \sim S$ 3, 8, MT
10. S 9, DN

- [4] 1. $(Q \vee S) \supset \sim P$
2. $Q \vee (R \cdot S)$
3. $(Q \vee R) \supset \sim L$
4. $K \supset (L \vee P)$ / $\sim K$
5. $(Q \vee R) \cdot (Q \vee S)$ 2, Dist
6. $Q \vee R$ 5, Simp
7. $\sim L$ 3, 6, MP
8. $Q \vee S$ 5, Simp
9. $\sim P$ 1, 8, MP
10. $\sim L \cdot \sim P$ 7, 9, Conj
11. $\sim (L \vee P)$ 10, DM
12. $\sim K$ 4, 11, MT

[5]	1. $(R \cdot M) \supset L$	
	2. $(\sim M \vee Q) \supset \sim(R \cdot S)$	
	3. $R \cdot \sim L$	$/ \sim(L \vee S)$
	4. $\sim L$	3, Simp
	5. $\sim(R \cdot M)$	1, 4, MT
	6. $\sim R \vee \sim M$	5, DM
	7. R	3, Simp
	8. $\sim \sim R$	7, DN
	9. $\sim M$	6, 8, DS
	10. $\sim M \vee Q$	9, Add
	11. $\sim(R \cdot S)$	2, 10, MP
	12. $\sim R \vee \sim S$	11, DM
	13. $\sim S$	8, 12, DS
	14. $\sim L \cdot \sim S$	4, 13, Conj
	15. $\sim(L \vee S)$	14, DM

Section C:

[1]	1. $P \supset (Q \cdot R)$	$/ (S \supset P) \supset (S \supset R)$
	<div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 3. S </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 4. P </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 5. $Q \cdot R$ </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 6. R </div> </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 7. $S \supset R$ </div> </div>	Assumption (CP) Assumption (CP) 2, 3, MP 1, 4, MP 5, Simp 3–6, CP
	8. $(S \supset P) \supset (S \supset R)$	2–7, CP

[2]	1. $P \supset Q$	$/ \sim(Q \vee S) \supset \sim P$
	2. $\sim Q \supset \sim P$	1, Trans
	<div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 3. $\sim Q$ </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 4. $\sim P$ </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 5. $\sim P \vee S$ </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 6. $S \vee \sim P$ </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 7. $\sim \sim S \vee \sim P$ </div> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> 8. $\sim S \supset \sim P$ </div> </div>	Assumption (CP) 2, 3, MP 4, Add 5, Com 6, DN 7, Impl
	9. $\sim Q \supset (\sim S \supset \sim P)$	3–8, CP
	10. $(\sim Q \cdot \sim S) \supset \sim P$	9, Exp
	11. $\sim(Q \vee S) \supset \sim P$	10, DM

[3]	1. $\sim (P \cdot \sim Q)$	
	2. $\sim P \supset \sim R$	
	3. $(R \cdot Q) \supset S$	/ $R \supset S$
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	4. R	<i>Assumption (CP)</i>
	5. $\sim \sim R$	4, DN
	6. $\sim \sim P$	2, 5, MT
	7. $\sim P \vee \sim \sim Q$	1, DM
	8. $\sim P \vee Q$	7, DN
	9. Q	6, 8, DS
	10. $R \cdot Q$	4, 9, Conj
	11. S	3, 10, MP
	12. $R \supset S$	4–11, CP

[4]	1. $D \supset E$	
	2. $E \supset F$	
	3. $A \supset [C \vee (D \cdot \sim B)]$	/ $A \supset (C \vee F)$
	4. $D \supset F$	1, 2, HS
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	5. A	<i>Assumption (CP)</i>
	6. $C \vee (D \cdot \sim B)$	3, 5, MP
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	7. $\sim C$	<i>Assumption (CP)</i>
	8. $D \cdot \sim B$	6, 7, DS
	9. D	8, Simp
	10. F	4, 9, MP
	11. $\sim C \supset F$	7–10, CP
	12. $\sim \sim C \vee F$	11, Impl
	13. $C \vee F$	12, DN
	14. $A \supset (C \vee F)$	5–13, CP

[5]	1. $\sim P \supset \sim (Q \vee \sim P)$	/ P
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	2. $\sim P$	<i>Assumption (IP)</i>
	3. $\sim (Q \vee \sim P)$	1, 2, MP
	4. $\sim Q \cdot \sim \sim P$	3, DM
	5. $\sim \sim P$	4, Simp
	6. P	5, DN
	7. $P \cdot \sim P$	2, 6, Conj
	8. $\sim \sim P$	2–7, IP
	9. P	8, DN