

Phi 270 F03 test 2

1. Define contradictoriness by completing the following:

ϕ and ψ are contradictory if and only if ...

(Your answer should define contradictoriness in terms of truth values and possible worlds.)

answer

Analyze each sentence below in as much detail as possible, presenting the result using both symbolic and English notation for the connectives. Be sure that the unanalyzed components of your answer are complete and independent sentences; also try to respect any grouping in the English.

2. Ann found the note but didn't recognize the signature

answer

3. Either the manufacturer and the distributor weren't both available or neither of them changed its offer

answer

Use derivations to check whether each of the entailments below holds. If one fails, present a counterexample by providing a table in which you calculate the truth values of the premises and conclusion on an extensional interpretation (i.e., an assignment of truth values) which divides an open gap.

Do not use attachment or detachment rules in **4** and **5**. That is, do not use Adj or the new rules of 4.3; instead use only the basic rules for exploiting resources, planning for goals, and closing gaps.

4. $\neg B \Rightarrow \neg (A \wedge B)$

answer

5. $\neg (\neg A \wedge \neg B), C \wedge \neg B \Rightarrow A$

answer

In **6** and **7** you **may** use attachment and detachment rules if you have an opportunity to do so.

6. $A \vee B \Rightarrow C \vee D$

answer

7. $\neg (A \wedge C), A \vee B, \neg (B \wedge \neg D) \Rightarrow \neg (C \wedge \neg D)$

answer

Phi 270 F03 test 2 answers

1. ϕ and ψ are contradictory if and only if there is no possible world where they have the same truth value.

2. Ann found the note but didn't recognize the signature
 Ann found the note \wedge Ann didn't recognize the signature
 Ann found the note $\wedge \neg$ Ann recognized the signature

$$F \wedge \neg R$$

both F and not R

F: Ann found the note; R: Ann recognized the signature

3. Either the manufacturer and the distributor weren't both available or neither of them changed its offer
 the manufacturer and the distributor weren't both available \vee neither the manufacturer nor the distributor changed its offer
 \neg the manufacturer and the distributor were both available $\vee \neg$ either the manufacturer or the distributor changed its offer
 \neg (the manufacturer was available \wedge the distributor was available) $\vee \neg$ (the manufacturer changed its offer \vee the distributor changed its offer)

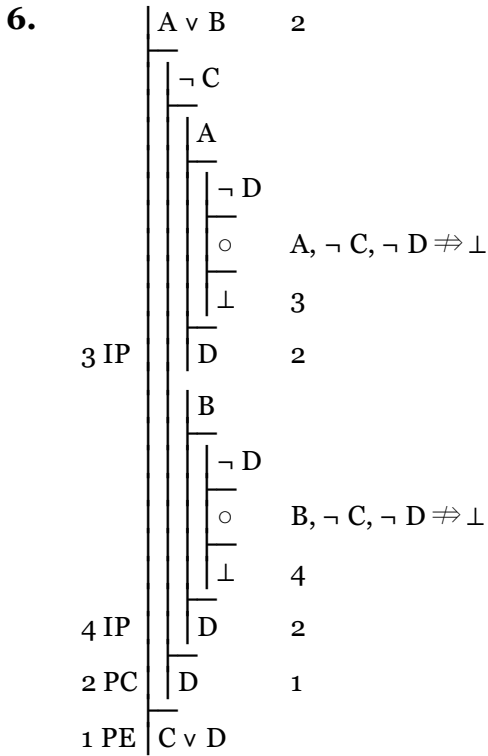
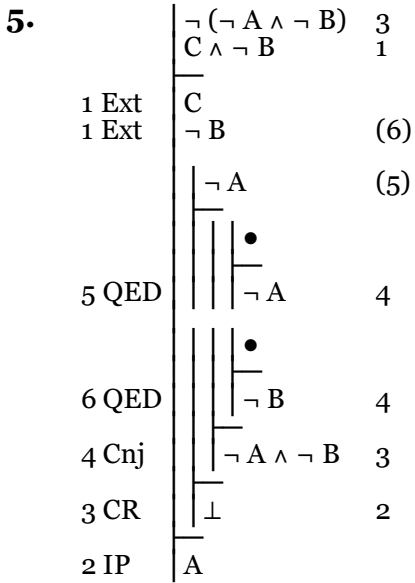
$$\neg (A \wedge V) \vee \neg (C \vee H)$$

either not both A and V or not either C or H

A: the manufacturer was available; C: the manufacturer changed its offer; H: the distributor changed its offer; V: the distributor was available

4.

$\neg B$	(3)
$A \wedge B$	2
2 Ext 2 Ext A	
B	(3)
\bullet	
3 Nc \perp	1
1 RAA $\neg (A \wedge B)$	



A	B	C	D	$A \vee B / C \vee D$
T	F	F	F	Ⓟ Ⓣ divides 1st open gap
T	T	F	F	Ⓟ Ⓣ divides both open gaps
F	T	F	F	Ⓟ Ⓣ divides 2nd open gap

7.

	$\neg (A \wedge C)$	3
	$A \vee B$	4
	$\neg (B \wedge \neg D)$	5
	<hr/>	
	$C \wedge \neg D$	2
	<hr/>	
2 Ext	C	(3)
2 Ext	$\neg D$	(6)
3 MPT	$\neg A$	(4)
4 MTP	B	(5)
5 MPT	D	(6)
	\bullet	
	<hr/>	
6 Nc	\perp	1
	<hr/>	
1 RAA	$\neg (C \wedge \neg D)$	