

Phi 270 F03 test 1

1. Define entailment by completing the following: $\Gamma \Rightarrow \phi$ if and only if (Your answer need not replicate the wording of the text's definitions, but it should define entailment in terms of truth values and possible worlds. Remember that Γ is a set, not a sentence, though its members are sentences.)

answer

2. Define absurdity by completing the following: ϕ is absurd if and only if (Your answer need not replicate the wording of the text's definitions, but it should define absurdity in terms of truth values and possible worlds.)

answer

3. Is it possible for there to be a pair of sentences ϕ and ψ where (i) $\phi \Leftrightarrow \psi$ (i.e., ϕ and ψ are equivalent) and (ii) ϕ and ψ together form an inconsistent set (i.e., the set $\{\phi, \psi\}$ is inconsistent)? If it is possible for both (i) and (ii) to be true of a pair of sentences ϕ and ψ , describe (in terms of the possibilities for truth values) what ϕ and ψ must be like. If it is not possible, explain why in terms of possibilities for truth values. (Hint: this is not a trick question but it may trip you up if you try to answer it intuitively; you'll do better to just think through the consequences of the definitions of equivalence and inconsistency.)

answer

4. Give an example of implicature, presenting a sentence and describing situations in which it (i) is true and not misleading, (ii) is true but misleading, and (iii) is false. Explain your answer.

answer

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

The road was completed and opened to traffic, but it was closed for repairs and has not been re-opened

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.

6. $A \wedge B, C \wedge (D \wedge E) \Rightarrow B \wedge D$

answer

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

answer

Phi 270 F03 test 1 answers

1. $\Gamma \Rightarrow \phi$ if and only if there is no possible world in which ϕ is false while all members of Γ are true
2. ϕ is absurd if and only if there is no possible world in which ϕ is true
3. If ϕ and ψ are equivalent they must have the same truth value as each other in every possible world. If they form an inconsistent set, there is no possible world in which both are true. Both of these are possible if there is no possible world in which either ϕ or ψ is true; that is, it is possible if both are absurd.
4. To re-use an example from class, if I say “My class was taught this morning” to someone, my statement (i) would be true and not misleading if someone else taught my class, (ii) would be true but misleading if I taught it, and (iii) would be false if it wasn’t taught at all. (i) and (ii) differ regarding the truth of an implicature of the sentence, which arises because saying “My class was taught” instead of “I taught my class” would usually be inappropriate unless I didn’t teach my class.
5. The road was completed and opened to traffic, but it was closed for repairs and has not been re-opened
The road was completed and opened to traffic \wedge the road was closed for repairs and has not been re-opened
(the road was completed \wedge the road was opened to traffic) \wedge (the road was closed for repairs \wedge the road has not been re-opened)

$$(C \wedge O) \wedge (R \wedge N)$$

both both C and O and both R and N

C: the road was completed; N: the road has not been re-opened;
O: the road was opened to traffic; R: the road was closed for repairs

6.	$A \wedge B$	1
	$C \wedge (D \wedge E)$	2
1 Ext	A	
1 Ext	B	(5)
2 Ext	C	
2 Ext	$D \wedge E$	3
3 Ext	D	(6)
3 Ext	E	
	•	
5 QED	B	4
	•	
6 QED	D	4
4 Cnj	$B \wedge D$	

7.	$A \wedge B$	1
	$D \wedge E$	2
1 Ext	A	(5)
1 Ext	B	
2 Ext	D	(6)
2 Ext	E	
	•	
5 QED	A	4
	○	$A, B, D, E \not\Rightarrow C$
	C	4
4 Cnj	$A \wedge C$	3
	•	
6 QED	D	3
3 Cnj	$(A \wedge C) \wedge D$	

This derivation could be ended after the first dead-end open gap appears at stage 4.

A	B	C	D	E	$A \wedge B, D \wedge E / (A \wedge C) \wedge D$
T	T	F	T	T	Ⓘ Ⓘ F Ⓕ