

Phi 270 F99 test 1

1. Define tautologousness by completing the following: $\Rightarrow \phi$ if and only if (Your answer need not replicate the wording of the text's definitions, but it should define tautologousness in terms of truth values and possible worlds.)
[answer]
2. Suppose you know that $\phi \Rightarrow \chi$ and that $\psi \Rightarrow \chi$ (i.e., χ is implied, or entailed, by each one of ϕ and ψ). Can you conclude that $\phi \Leftrightarrow \psi$ (i.e., ϕ and ψ are equivalent)? Explain why or why not by reference to the definitions of entailment and equivalence, making explicit reference to the possibilities of truth and falsity mentioned in these definitions.
[answer]
3. Give your own example of a true sentence with a false implicature, using the definition of implicature to explain why it is an example. [The originality of the example counts for something here but your explanation is the more important aspect of the answer.]
[answer]
4. Analyze the sentence below in as much detail as possible, presenting the result in both symbolic and English notation. Be sure that the unanalyzed components of your answer are complete and independent sentences; also try to respect any grouping in the English.

Sam finished the job even though he was tired and it wasn't urgent.

[answer]

Use the basic system of derivations (i.e., no replacement rules) to check whether each of the entailments below holds. If one fails, provide 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.

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

[answer]

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

[answer]

7. [This question was on a topic not covered in FO4] Use replacement principles to put the following sentence into list normal form (in which no conjunction is the left component of a conjunction and letters appear in alphabetical order without repetition):

$$A \wedge ((B \wedge A) \wedge C)$$

[answer]

Phi 270 F99 test 1 answers

1. $\Rightarrow \phi$ if and only if there is no possible world in which ϕ is false.
2. No. The information about entailment tells you that χ is true in

every possible world in which ϕ is true and also in every one where ψ is true. But there could still be possible worlds where one of ϕ and ψ is true while the other is false, and it is such worlds that would have to be ruled out for us to be sure that ϕ and ψ are equivalent.

3. [An example of the kind of thing you might say:] *Al got into a house* would be true when said of someone who entered his own house through an unlocked door. But the sentence would ordinarily implicate that Al entered a house that wasn't his own and faced some difficulty in doing so because such factors would be the most likely reason for it to be appropriate to use *a house* rather than *his house* and *got into* rather than *went into*.
4. *Sam finished the job even though he was tired and it wasn't urgent*
Sam finished the job \wedge *Sam was tired and the job wasn't urgent*
Sam finished the job \wedge (*Sam was tired* \wedge *the job wasn't urgent*)

$$F \wedge (T \wedge N)$$

both F and both T and N

[F: *Sam finished the job*; N: *the job wasn't urgent*; T: *Sam was tired*]

5.

	(A \wedge B) \wedge C	1
1 Ext	A \wedge B	2
1 Ext	C	(4)
2 Ext	A	(5)
2 Ext	B	
	•	
4 QED	C	3
	•	
5 QED	A	3
3 Cnj	C \wedge A	

6.	$A \wedge D$ $E \wedge A$ <hr style="width: 100%;"/> 1 Ext A 1 Ext D 2 Ext E 2 Ext A 5 QED \bullet <hr style="width: 100%;"/> A 4 Cnj \circ <hr style="width: 100%;"/> B 4 Cnj \circ <hr style="width: 100%;"/> $A \wedge B$ 3 Cnj \circ <hr style="width: 100%;"/> C 3 Cnj \circ <hr style="width: 100%;"/> $(A \wedge B) \wedge C$	1 2 (5) 4 4 3 3 3
----	---	--

Only one of the following counterexamples need be presented. The first two divide the first open gap and the last two divide the second one.

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

7. [This question was on a topic not covered in Fo4]

$$\begin{aligned}
& A \wedge ((B \wedge A) \wedge C) \\
& \Leftrightarrow \\
& A \wedge ((A \wedge B) \wedge C) \\
& \Leftrightarrow \\
& A \wedge (A \wedge (B \wedge C)) \\
& \Leftrightarrow \\
& (A \wedge A) \wedge (B \wedge C) \\
& \Leftrightarrow \\
& A \wedge (B \wedge C)
\end{aligned}$$