

Phi 270 F96 test 5

(questions from the last of 6 quizzes)

Analyze the following sentences in as much detail as possible, providing a key to the non-logical vocabulary (upper and lower case letters) appearing in your answer.

1. **Ned has visited a museum in Linden.** [Give this analysis also using an unrestricted quantifier.]

answer

2. **Something blocked each route.** [This sentence is ambiguous. Analyze it in two ways, as making a claim of *general exemplification* and as making the stronger claim of *uniformly general exemplification*, and indicate which analysis is which.]

answer

3. **At most one plan was implemented.**

answer

Analyze the sentence below using each of the two ways of analyzing definite descriptions. That is, analyze it using Russell's analysis of definite descriptions as quantifier phrases and then analyze it again using the description operator.

4. **The scout you saw saw you.**

answer

Use derivations to show that the following argument is valid. You may use any rules.

5.
$$\begin{array}{l} \exists x Rax \\ \hline \forall x (\exists y Ryx \rightarrow Fx) \\ \hline \exists x Fx \end{array}$$

answer

Use a derivation to show that the following argument is not valid and describe a structure dividing an open gap.

6.
$$\begin{array}{l} \exists x Fx \\ \hline Ga \\ \hline \exists x (Fx \wedge Gx) \end{array}$$

answer

Complete the following to give a definition of entailment in terms of truth values and possible worlds:

7. A sentence ϕ is entailed by a set Γ if and only if ...

answer

Describe a structure (i.e., an assignment of extensions to the non-logical vocabulary) which makes the following sentences all true. (You may present the structure using either tables or a diagram.)

8. $a = b, fb = fc, Pa, \neg P(fa), Rab, \neg Rbc, Rb(fb)$

answer

Give two different restatements of the sentence below in expanded form as a complex predicate (i.e., an abstract) applied to a term.

9. $Fa \wedge Ga$

answer

Phi 270 F96 test 5 answers

1. Ned has visited a museum in Linden

$(\exists x: x \text{ is a museum in Linden})$ Ned has visited x

$(\exists x: x \text{ is a museum} \wedge x \text{ is in Linden})$ Ned has visited x

$(\exists x: Mx \wedge Nx) \forall nx$

$\exists x ((Mx \wedge Nx) \wedge \forall nx)$

M: [is a museum]; N: [is in]; V: [has visited]; l: Linden; n: Ned

2. *general exemplification*

$(\forall x: x \text{ is a route})$ something blocked x

$(\forall x: Rx) \exists y$ blocked x

$(\forall x: Rx) \exists y \text{ Byx}$

uniformly general exemplification

$\exists y$ blocked each route

$\exists y (\forall x: x \text{ is a route}) y$ blocked x

$\exists y (\forall x: Rx) \text{ Byx}$

B: [blocked]; R: [is a route]

3. At most one plan was implemented

\neg at least two plans were implemented

$\neg (\exists x: x \text{ is a plan}) (\exists y: y \text{ is a plan} \wedge \neg y = x) (x \text{ was implemented} \wedge y \text{ was implemented})$

$\neg (\exists x: Px) (\exists y: Py \wedge \neg y = x) (Ix \wedge Iy)$

I: [was implemented]; P: [is a plan]

4. *using Russell's analysis:*

the scout you saw is such that (he or she saw you)

$(\exists x: x \text{ and only } x \text{ is a scout you saw}) Sxo$

$(\exists x: x \text{ is a scout you saw} \wedge (\forall y: \neg y = x) \neg y \text{ is a scout you saw})$

Sxo

$(\exists x: (Tx \wedge Sox) \wedge (\forall y: \neg y = x) \neg (Ty \wedge Soy)) Sxo$

using the description operator:

the scout you saw saw you

$S(\text{the scout you saw})o$

$S(l \ x \ x \text{ is a scout you saw})o$

$S(l \ x \ (x \text{ is a scout} \wedge \text{you saw } x))o$

$S(l \ x \ (Tx \wedge Sox))o$

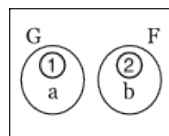
S: [_ saw _]; T: [_ is a scout]; o: you

5.

	$\exists x \text{ Rax}$	1
	$\forall x (\exists y \text{ Ryx} \rightarrow \text{Fx})$	b:2
	ⓑ	
	Rab	(3)
	—	
2 UI	$\exists y \text{ Ryb} \rightarrow \text{Fb}$	4
3 EG	$\exists y \text{ Ryb}$	X, (4)
4 MPP	Fb	(4)
5 EG	$\exists x \text{ Fx}$	X, (6)
	•	
	—	
6 QED	$\exists x \text{ Fx}$	1
1 PCh	$\exists x \text{ Fx}$	

6.

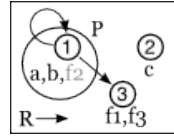
	$\exists x \text{ Fx}$	1
	Ga	(4)
	ⓑ	
	Fb	(6)
	—	
	$\forall x \neg (\text{Fx} \wedge \text{Gx})$	a:3, b:5
	—	
3 UI	$\neg (\text{Fa} \wedge \text{Ga})$	4
4 MPT	$\neg \text{Fa}$	
5 UI	$\neg (\text{Fb} \wedge \text{Gb})$	6
6 MPT	$\neg \text{Gb}$	
	○	$\neg \text{Fa}, \text{Fb}, \text{Ga}, \neg \text{Gb} \not\Rightarrow \perp$
	—	
	\perp	2
	—	
2 NcP	$\exists x (\text{Fx} \wedge \text{Gx})$	1
1 PCh	$\exists x (\text{Fx} \wedge \text{Gx})$	



7. A sentence ϕ is entailed by a set Γ of sentences if and only if there is no possible world in which ϕ is false while each member of Γ is true.

8. range: 1, 2, 3

a	b	c	τ	$f\tau$	τ	$P\tau$	R	1	2	3
1	1	3	1	2	1	T	1	T	T	F
	2	1	2	1	2	F	2	F	F	F
	3	2	3	2	3	F	3	F	F	F



(The diagram provides a complete answer, and so do the tables to its left. The tables below show a way of arriving at these answers.)

<i>alias sets</i>	<i>IDs</i>	<i>values</i>	<i>resources</i>	<i>values</i>
a	1	a: 1	Pa	P1: T
b		b: 1	$\neg P(\text{fa})$	P2: F
fa	2	f1: 2	Rab	R11: T
fb		f1: 2	$\neg Rbc$	R13: F
fc		f3: 2	Rb(fb)	R12: T
c	3	c: 3		

9. The following are 4 possibilities (up to choice of the variable) from which your two might be chosen; in the last, τ may be any term:

- $[Fx \wedge Gx]_x a$
- $[Fx \wedge Ga]_x a$
- $[Fa \wedge Gx]_x a$
- $[Fa \wedge Ga]_x \tau$