Phi 270 F97 test 4

(questions 1-3 are from quiz 4 and 4-9 are from quiz 5 out of 6 quizzes—these two quizzes addressed the part of the course your test is designed to cover)

1. Identify individual terms and quantifier phrases in the following sentence and indicate links between pronouns and their antecedents. (You can do this by marking up an English sentence; you are *not* being asked to provide a symbolic analysis.)

Everyone who Carol lent the book to spoke to her at length about it.

answer

Analyze the following generalizations in as much detail as possible. Provide a key to the non-logical vocabulary (upper and lower case letters) appearing in your answer *and restate the result using an unrestricted quantifier*.

2. Bob called no one.

answer

3. Among contestants, only professionals were finalists.

answer

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.

4. Bob doesn't own any map showing Dafter.

answer

5. Nothing anyone said bothered Dave.

answer

Use derivations to establish the validity of the following arguments. You may use attachment rules.

6.
$$\frac{\forall x\,(Fx \wedge Gx)}{\forall x\,Fx}$$

answer

7.
$$\frac{\forall x\,(Rxa \rightarrow \forall y\,Rxy)}{\forall x\,(\forall y\,Rxy \rightarrow Rxb)}$$

answer

8. Use a derivation to show that the following argument is not valid and describe a structure dividing one of the derivation's open gaps. (You will *not* need the rules UG+ and ST of 7.8 that were designed to avoid unending derivations.)

$$\frac{\forall x\,(Fx \rightarrow Rax)}{\forall x\,(Fx \rightarrow Rxa)}$$

answer

You will receive credit for *one* of the following (but you may attempt both):

9a. Synthesize an English sentence whose analysis would yield the following form.

(∀x: Dx) (Okx → (∀y: Dy) Oky)

D: [_ is a door]; O: [_ opens _]; k: the key

answer

9b. Use derivations to establish the validity of the following argument. You may use attachment rules.

∀x ∀y (Rxy → ¬ Fy)

∀x (Fx → Rxx)

∀x ¬ Fx

answer

Phi 270 F97 test 4 answers

1.

Q T T

2. Bob called no one

no one is such that (Bob called him or her)

(∀x: x is an person) ¬ Bob called x

(∀x: Px) ¬ Cbx

∀x (Px → ¬ Cbx)

C: [_ called _]; P: [_ is person]; b: Bob

3. Among contestants, only professionals were finalists

Among contestants, only professionals are such that (they were finalists)

(∀x: x was a contestant ∧ ¬ x was a professional) ¬ x was a finalist

(∀x: Cx ∧ ¬ Px) ¬ Fx

∀x ((Cx ∧ ¬ Px) → ¬ Fx)

C: [_ was a contestant]; F: [_ was a finalist]; P: [_ was a professional]

4. Bob doesn't own any map showing Dafter

every map showing Dafter is such that (Bob doesn't own it)

(∀x: x is a map showing Dafter) ¬ Bob owns x

(∀x: x is a map ∧ x shows Dafter) ¬ Obx

(∀x: Mx ∧ Sxd) ¬ Obx

M: [_ is a map]; O: [_ owns _]; S: [_ shows _]; b: Bob; d:

Dafter

5. Nothing anyone said bothered Dave
everyone is such that (nothing he or she said bothered Dave)
(∀x: x is a person) nothing x said bothered Dave
(∀x: Px) nothing x said is such that (it bothered Dave)
(∀x: Px) (∀y: y is a thing x said) ¬ y bothered Dave
(∀x: Px) (∀y: x said y) ¬ Byd
(∀x: Px) (∀y: Sxy) ¬ Byd
B: [_ bothered _]; P: [_ is a person]; S: [_ said _]; d: Dave

6.

	∀x (Fx ∧ Gx)	a:2
	ⓐ	
2 UI	Fa ∧ Ga	3
3 Ext	Fa	
3 Ext	Ga	(4)
	●	
4 QED	Fa	1
1 UG	∀x Fx	

7.

	∀x (Rxa → ∀y Rxy)	
	ⓒ	
	∀y Rcy	a:3
3 UI	Rcb	(4)
	●	
4 QED	Rcb	2
2 CP	∀y Rcy → Rcb	1
1 UG	∀x (∀y Rxy → Rxb)	

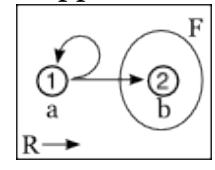
	∀x (Rxa → ∀y Ryx)	c:4
	ⓒ	
	∀y Rcy	a:3
3 UI	Rca	(5)
4 UI	Rca → ∀y Ryc	5
5 MPP	∀y Ryc	b:6
6 UI	Rbc	(7)
	●	
7 QED	Rbc	2
2 CP	∀y Rcy → Rbc	1
1 UG	∀x (∀y Rxy → Rbx)	

[The first premise is never used in the derivation for this question (shown at the left). The fact that it was not needed was a slip on my part in making up the question; at the right is the sort of example I probably had in mind.]

8.

	∀x (Fx → Rax)	b:3, a:5
	ⓑ	
	Fb	(4)
3 UI	Fb → Rab	4
4 MPP	Rab	
5 UI	Fa → Raa	7
	¬ Rba	
	¬ Fa	
	○	Fb, Rab, ¬ Rba, ¬ Fa ⇏ ⊥
	⊥	8
8 IP	Fa	7
	Raa	
	○	Fb, Rab, ¬ Rba, Raa ⇏ ⊥
	⊥	7
7 RC	⊥	6
6 IP	Rba	2
2 CP	Fb → Rba	1
1 UG	∀x (Fx → Rxa)	

The structure below divides both gaps; it will divide only the first gap if the arrow from 1 to itself is dropped.



9a. (∀x: x is a door) (the key opens x → (∀y: y is a door) the key opens y)

(∀x: x is a door) (the key opens x → every door is such that (the key opens it))

(∀x: x is a door) (the key opens x → the key opens every door)

(∀x: x is a door) if the key opens x, then it opens every door

every door is such that (if the key opens it, then it opens every door)

If the key opens any door, then it opens every door

9b.

	∀x ∀y (Rxy → ¬ Fy)	a:2
	∀x (Fx → Rxx)	a:4
	———	
	ⓐ	
2 UI	∀y (Ray → ¬ Fy)	a:6
	Fa	(5), (8)
	———	
4 UI	Fa → Raa	5
5 MPP	Raa	(7)
6 UI	Raa → ¬ Fa	7
7 MPP	¬ Fa	(8)
	●	
	———	
8 Nc	⊥	3
	———	
3 RAA	¬ Fa	1
	———	
1 UG	∀x ¬ Fx	