Phi 270 F96 quiz 3 and part of quiz 4 (of 6) in pdf format

(questions from these two tests addressed the part of the course your test is designed to cover)

Analyze the sentences below in as much detail as possible *without* going below the level of sentences (i.e., without recognizing individual terms and predicates). Be sure that the unanalyzed components of your answer are complete and independent sentences and that you respect any grouping in the English.

3-1. *You won't succeed unless you try.*
[answer]

3-2. *If it was after 5, Sam got in only if he had a key.*
[answer]

Check each of the following claims of entailment using the basic system of derivations (i.e., *do not use* attachment rules but *you may use* detachment rules). If a derivation fails, present a counterexample that divides its premises from its conclusion.

3-3. (A ∧ B) → C ⇒ A → C
[answer]

3-4. C → (A → B) ⇒ (A ∧ ¬ B) → ¬ C
[answer]

3-5. Analyze the sentence below in as much detail as possible, continuing the analysis when there are no more connectives by identifying predicates, functors, and individual terms. Be sure that the unanalyzed expressions in your answer are independent and that you respect any grouping in the English.

If Ann's car is the one you saw, she wasn't driving it.

[answer]

3-6. [This question was on a topic not covered in F05]

a. Give two different expansions (using predicate abstracts) of the reduced form: Raa.
[answer]

b. Put the following into reduced form: [λx (Fx ∧ Pxb)]c.
[answer]

4-1. 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 either using tables or, where possible, using diagrams.)

a = c, ga = gb, Pa, ¬ P(ga), Rab, Rbc, ¬ Rc(ga)

[answer]

Check each of the claims of entailment below using derivations. You need *not* describe structures dividing gaps you leave open.

4-2. Ha ∧ c = d, G(fd) ⇒ G(fc) ∧ (a = b → Hb)
[answer]

4-3. Ra(fa) ∧ Rb(fb), fa = b ⇒ Ra(f(fa))
[answer]

Phi 270 F96 Answers to quiz 3 part of quiz 4

3-1. *You won't succeed unless you try*

you won't succeed ← ¬ *you will try*

¬ *you will succeed* ← ¬ *you will try*

¬ S ← ¬ T ***or*** ¬ T → ¬ S

`if not` T `then not` S

[S: *you will succeed*; T: *you will try*]

3-2. *If it was after 5, Sam got in only if he had a key*

it was after 5 → *Sam got in only if he had a key*

it was after 5 → (¬ *Sam got in* ← ¬ *Sam had a key*)

A → (¬ G ← ¬ K) ***or*** A → (¬ K → ¬ G)

`if` A `then if not` K `then not` G

[A: *it was after 5*; G: *Sam got in*; K: *Sam had a key*]

3-3.

```
        │(A ∧ B) → C    3
        ├─
        │ │A            (4)
        │ ├─
        │ │ │¬ C        (3)
        │ │ ├─
3 MTT   │ │ │¬ (A ∧ B)  4
4 MPT   │ │ │¬ B
        │ │ │○          A,¬ B,¬ C ⇏ ⊥
        │ │ ├─
        │ │ │⊥          2
        │ ├─
2 IP    │ │C            1
        ├─
1 CP    │A → C
```

A	B	C	(A ∧ B) → C	/	A → C
T	F	F	F Ⓣ		Ⓕ

3-4.

```
        │C → (A → B)      4
        ├─
        │ │A ∧ ¬ B        2
        │ ├─
2 Ext   │ │A              (5)
2 Ext   │ │¬ B            (6)
        │ │
        │ │ │C            (4)
        │ │ ├─
4 MPP   │ │ │A → B        5
5 MPP   │ │ │B            (6)
        │ │ │●
        │ │ ├─
6 Nc    │ │ │⊥            3
        │ ├─
3 RAA   │ │¬ C            1
        ├─
1 CP    │(A ∧ ¬ B) → ¬ C
```

3-5. *If Ann's car is the one you saw, she wasn't driving it*

Ann's car is the one you saw → ¬ *Ann was driving Ann's car*

Ann's car = *the car you saw* → ¬ [λxy (x *was driving* y)] *Ann* (*Ann's car*)

[λx (x*'s car*)] *Ann* = [λx (*the car* x *saw*)] *you* → ¬ Da([λx (x*'s car*)] *Ann*)

ca = ro → ¬ Da(ca)

[ca = ro → ¬ Da(ro) is also possible]

D: λxy (x *was driving* y); a: *Ann*; c: λx (x*'s car*); o: *you*; r: λx (*the car* x *saw*)

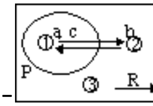
3-6. [This question was on a topic not covered in F05]

a. The following are the possibilities; in the last, τ may be any term:

[λx Rxx]a, [λx Rxa]a, [λx Rax]a, [λx Raa]τ

b. Fc ∧ Pcb

4-1.




```
alias sets range: 1, 2, 3     | g      | P    R | 1 2 3
1: a, c      a b c          ---|--- ---|--- ---|-------
2: b        -------           1 | 3    1 | T    1 | F T F
3: ga, gb    1 2 1            2 | 3    2 | F    2 | T F F
                              3 | 1    3 | F    3 | F F F

  a = c   ga = gb   Pa   ¬P(ga)   Rab   Rbc   ¬Rc(ga)
 ------------------------------------------------------
  1 T 1   31 T 32   T1   TF 31    T12   T21   TF1 31
```

4-2.

```
        | Ha ∧ c = d
        | G(fd)                      (3)
        |---
1 Ext   | Ha                         (5)
1 Ext   | c = d                      a,b,c-d,fc-fd
        |  | •
        |  |---
3 QED=  |  | G(fc)                   2
        |  |  | a = b                a-b,c-d,fc-fd
        |  |  |---
        |  |  | •
        |  |  |---
5 QED=  |  |  | Hb                   4
        |  |---
4 CP    |  | a = b → Hb              2
        |---
2 Cnj   | G(fc) ∧ (a = b → Hb)
```

4-3.

```
        | Ra(fa) ∧ Rb(fb)   1
        | fa = b            a,b-fa,fb-f(fa)
        |---
1 Ext   | Ra(fa)
1 Ext   | Rb(fb)
        |  | ¬ Ra(f(fa))
        |  |---
        |  | ○              fa=b,Ra(fa),Rb(fb),¬Ra(f(fa)) ⇏ ⊥
        |  |---
        |  | ⊥              2
        |---
2 IP    | Ra(f(fa))
```