Write your answers on the exam (use the back of each page for additional space).

[ 2] 1. I arrived tonight in my blue truck. It’s a 6.8 mile drive. What color is my truck?

[16] 2. Define the following terms (in ≤ two sentences):
   (1) Subclass
   (2) Whole-part
   (3) Attribute
   (4) Instance Connection

[20] 3. Write down four of the class filtering rules. Explain each rules then give a realistic example of a situation in which it applies.

[12] 4. For each of the following Smalltalk expressions explain in object-oriented speak (i.e., using words like object and message) how Smalltalk evaluates each expression and what the result is. (Recall that “#(1 2 3)” is an array of size 3 containing the elements 1, 2, and 3.)
   (a) 4 + 3!
   (b) #(5 9 3 6 9 2 4) at: 3 factorial!
   (c) ’hello’ at: 2 put: ’a’!
   (d) a deposit: 42!
      (assume “a := Account new” for the Account class of your first assignment.)

[20] 5. Write down four of the class-&-object (C&O) discovery rules. Explain each rule then give a realistic example of a situation in which it applies.

[30] 6. Write an OOA for the following problem statement:

   The O’s have hired you to produce a new ticket reservation system. Tickets may be purchased up to 6 months in advance of a game. The system sells box, reserved, and general admission seats. Only box and reserved seats are assigned seating; general admission is first come, first server. In addition to the cost of the tickets, there is $1.75 handling fee. Groups get a discount! Groups of 25 or more get a 10% discount, while groups of 100 or more get a 20% discount. Refunds are issued if the request is received 2 weeks prior to the game and at least two weeks after their original purchase.

Since a complete analysis, would take months, I don’t expect one. Just illustrate to me that you understand the ideas. Your answer should include at least twelve classes, at least two inheritance (is-a) hierarchies of three or more classes, and at least two whole-part (has-a) relations.

Note that since you cannot talk with the problem domain expert, write down any assumptions that you make.