1. a. Which two of these specimens are pointed correctly? A  B  C  D (2 pts)
   b. Why are the other two wrong? (2 pts)

   Specimens _B___ and _C___ are wrong because the point is glued to their left side instead of right.

   COMMENTS: In first three questions you were supposed to focus only on pointing, pinning, and labeling, respectively; whether a specimen was labeled or not was of no importance for questions 1 and 2, and how the specimen was pinned wasn’t important in question 3.

2. a. Which one of these specimens is pinned correctly? A  B  C  D (1 pt)
   b. Why are the other three wrong? (3 pts)

   Specimen _A___ is wrong because pin is going through the wing and the center of the body, not the right side of the pronotum as it should (see illustration in Borror and White), and the pin is not perpendicular to the body.
   Specimen _B___ is wrong because it is too high on the pin, the pin is in the middle instead to the right, and the pin is not perpendicular to the body.
   Specimen _D___ is wrong because it is too low on the pin, the pin is in the center and not perpendicular to the body, its abdomen droops; the pin should go through the right side of the pronotum and there should be 1 cm of the pin above the insect.

3. Are these specimens labeled correctly? If not, explain why.

   Specimen A – incorrect because the collector is not listed.
   Specimen B – incorrect because the county is not listed.
   Specimen C – incorrect because the county is not listed.
   Specimen D – incorrect because the locality is not specific enough – town or some other specifier should be listed.

   COMMENTS: The method of collecting can be placed on the date/locality label and the method doesn’t necessarily equal ecological category – more often than not ecological category is different from the method of collecting. The label doesn’t have to be pinned through the center – most people pin their labels so that the label doesn’t take much more room in the collection than the insect (i.e., the label sticks out as little as possible under the insect). Labels usually start with the locality and end with the collector; you have some freedom on how to arrange the rest of the information on the label. If there is only one label on the pin, it is fine if that label is pretty low – that actually makes it easier to read the label information without having to pull the insect out of the drawer.

4. Make a black dot where the pin should go in these four insects. (4 pts)
5. What is the function of a Berlese funnel and how does it work? (2 pts)

It is used for separating insects out of soil and leaf litter. A sample is placed in the funnel on a mesh. On top the funnel there is a light and heat source (e.g. light bulb). The light and heat drive insects to the bottom of the funnel, where they fall into a jar with alcohol.

6. Describe one of the following collecting methods: sweeping, beating, sifting. (2 pts)

Sweeping: a sweep net is used for sweeping vegetation such as grasses and brush; after a few sweeps, the net is checked for insects.

Beating: a sheet is placed under vegetation that is beaten to dislodge insects, after beating you check what has landed on the sheet.

Sifting: using a sieve you separate insects from soil.

7. Why do we need to preserve some insects in alcohol instead on pins? (1 pt)

Some insects are so soft-bodied that they would shrivel on pins, so to preserve their morphological features, we have to keep them in alcohol.

8. What is an aspirator and what would you use it for? (2 pts)

An aspirator is a vial with two tubes attached to it; one of the tubes is placed on the insect that is to be collected, and through the other one the air needs to be sucked in – with this, the insect is sucked into the vial. This is used for small insects and insects that could be easily damaged with other methods of collecting.

9. Describe how you could protect your insect collection from specimen-destroying pests. (2 pts)

It is best to keep a collection in an air-tight container. If needed moth balls or some other pesticide can be added.

10. BONUS Cyanide and ethyl acetate are most commonly used killing agents. List some other killing agents. (Each one you add is worth one bonus point.)

- ethanol, isopropyl alcohol, freezing, acetone, chloroform, etc.