**Quiz 1**

     You may use any books, notes, or references, but you must work independently of other people.
     To keep the amount of writing under control, <u>please confine the answers to the space provided</u> (but write clearly and large enough to see!); outlines are fine.

1. (10 points) Describe how two-point registration ('Bookstein Coordinates') differs from Procrustes superimposition.  Why are the differences important?

2. (10 points) How might you use the NCBI's (National Center for Biotechnology Information) web site to determine if a DNA sample you sequenced was contaminated?

3.  (10 points) What are the arguments pro and con for rank-free phylogenetic classification versus the current Linnaean system?

4. (20 points) What are the general attributes of a "good" taxonomic character?  Give: (a) a list with a one sentence explanation; b) An indication of any particular problems faced by morphological and DNA-sequence data for each.

**(over)**

5. (10 points) Why might you be uncomfortable using the paleontological criterion for character polarization? What does this method imply about the adequacy of the fossil record?

6. (40 points) Briefly contrast the following pairs of terms (Use diagrams if they help):

homoplasy vs. homology

ontogeny of vertebrates  vs. ontogeny of mosses

semaphoront vs. OTU

epistemology vs. ontology

RFLP analysis vs. mapped restriction site studies

Lundberg rooting vs. outgroup rooting

parsimony vs. Unwieghted Pair Goup Method (UPGM) for tree building

ordering vs. polarity of character states

continuous characters vs. discrete-state characters

divisive vs. agglomerative clustering