The purpose of this assignment is to get you thinking about the upcoming final laboratory and lecture exams. You are welcome to discuss the answers to these questions with others, but your final responses must be an individual effort. Do NOT copy from others or have others copy from you! Answer all questions directly on this sheet. This assignment is due in lecture on Monday, May 5th.

1. Use simple, neat and fully-labeled drawings to illustrate each of the following floral situations. Provide as much detail and labeling as necessary to answer each question unambiguously. You will lose points if you do not include critical information, you do not include appropriate labels, or your drawings are messy or inappropriate for IB 335. You will also lose points for each error or mislabel, or if pencil is not used. [3 points each; 18 points total]

A. A flower L.S. of Rosa (subfamily Rosoideae)

B. A flower L.S. of Prunus (subfamily Amygdaloideae)

C. A carpellate flower L.S. of any insect-pollinated Acer species (Aceraceae)

D. A disk floret L.S. from a radiate capitulum of Asteraceae showing placement of pappus and chaff

E. A flower L.S. of any typical Member of Lamiaceae

F. A carpellate flower L.S. of Osmorhiza (Apiaceae) showing the stylodium
2. Construct a simple cladogram showing the relationships among the following major groups of flowering plants: ANITA Grade, Magnoliids, Monocots, Eudicots, Basal Eudicots (=Basal Tricolpates), Core Eudicots, Caryophyllales or Caryophyllid clade, Rosid Clade, Asterid Clade. Include the names of one family for each of the Magnoliid, Monocot, Basal Eudicot, Caryophyllales, Rosid Clade and Asterid clade. Indicate at least one non-molecular synapomorphy for each of the following groups: Magnoliids, Monocots, and Eudicots. [12 points]

- Not monophyletic.
- ANITA Grade: Magnoliids Monocots
- (1) Magnoliaceae features
- (2) Monocot features
- (3) Tricolpate pollen 3 pts.

3. Construct a proper dichotomous key for the identification of the following seven families: Apioaceae, Ericaceae, Oleaceae, Solanaceae, Lamiaceae, Scrophulariaceae, and Asteraceae. Use only those floral and fruiting features emphasized in lecture. [10 points]

1. Corolla distinct ... Apioaceae
2. Corolla sympetalous ... Ericaceae
3. Stamens not epipetalous ... Oleaceae
4. Flowers 4-merous ... Solanaceae
5. Flowers 5-merous ... Lamiaceae

6. Corolla plicate, anthers connivent ... Scroph.
7. Corolla not plicate, anthers not connivent ...
   Asteraceae.

5. Inflor, a capitulum, fruit an achene ... Asteraceae.
6. Flower not a capitulum, nutlets + capsules ...
   Scroph.
   Flower a capitulum, nutlets, gynobasic style ...
   Asteraceae.

0 possible combinations

Total Score ___________________ (out of 40)

1 pt. per family to be keyed successfully.

- 3 pts. for improper key construction.