Laboratory Practical Stations. Answer the questions at each station. (45%, 2-4% per station)

1. a. ________________________________  
   b. ________________________________

2. a. ________________________________  
   b. ________________________________

3. a. ________________________________  
   b. ________________________________

4. a. ________________________________  
   b. ________________________________

5. a. ________________________________  
   b. ________________________________

6. a. ________________________________  
   b. ________________________________

7. a. ________________________________  
   b. ________________________________

8. a. ________________________________  
   b. ________________________________

9. a. ________________________________  
   b. ________________________________

10. a. ________________________________  
    b. ________________________________

11. a. ________________________________  
    b. ________________________________

12. a. ________________________________
    b. ________________________________

13. a. ________________________________
    b. ________________________________

14. a. ________________________________
    b. ________________________________

15. a. ________________________________
    b. ________________________________

16. a. ________________________________
    b. ________________________________

17. a. ________________________________
    b. ________________________________

18. a. ________________________________
    b. ________________________________

19. Station 19 is a performance station worth 4%. (Isolation streaking of bacteria.)

20. On the illustration at left… (2%, 1% each)
    a. ________________________________
    b. ________________________________

21. Use three “technical” descriptive leaf terms to describe the leaves depicted at left. (3%, 1% each)
    a. ________________________________
    b. ________________________________
    c. ________________________________
**Hypothesis Evaluation.** Is there statistically significant support for each of the following hypotheses? (6%, 2% each)

1. **Hypothesis** = The density of bacteria is greater in fertilized lawns than in unfertilized lawns.
   
   **Data** = Mean number of colonies on a Petri plate spread with 0.25 ml of a 1:100 unfertilized lawn soil dilution = 9.5, Mean number of colonies on a Petri plate spread with 0.25 ml of a 1:100 fertilized lawn soil dilution = 59.3,
   
   **p value** = 0.060
   
   Circle one: **Hypothesis Supported**  **Hypothesis NOT Supported**

2. **Hypothesis** = Bacterial species richness is greater on the faces of women who wear makeup than those who do not.
   
   **Data** = Mean number of species per swab of face without makeup = 6.7, Mean number of species per swab of face with makeup = 4.3,
   
   **p value** = 0.044
   
   Circle one: **Hypothesis Supported**  **Hypothesis B NOT Supported**

3. **Hypothesis** = Plant species richness is lower at higher altitudes.
   
   **Data** = Mean number species of plants around Denver = 23.5, Mean number species of plants around the Eisenhower tunnel (higher in elevation) = 24.1,
   
   **p value** = 0.005
   
   Circle one: **Hypothesis Supported**  **Hypothesis B NOT Supported**

**Definitions.** Define each BIOLOGICAL term from THIS LABORATORY in an accurate, concise, and lucid manner. (20%, 4% each)

1. Connective tissue:

2. Electrophoresis:

3. Gram stain:

4. Negative Control:

5. **p-value:**
Data Analysis. Complete each exercise in as concise and lucid a manner as possible.

1. Given the following data from a small, reproductively isolated, constant-sized population,
   a) calculate the **allele and genotype frequencies** for every time period. (5%)
   b) Create a properly labeled **graph** of the allele frequency of **one** of the alleles **(NOT both)**
      over time. (5%)
   c) Is the population at Hardy Weinberg equilibrium at time 0? (show calculations) (3%)
   d) Is the population at Hardy Weinberg equilibrium at time 20? (show calculations) (3%)
   e) Propose a plausible explanation for what you observed based on a through d? (2%)

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Experimental Design. (11%)

Use the back of this page to design a **rigorous but relatively simple** experiment with
appropriate control(s) and replication to test the following hypothesis. *Fungal species
richness is greater on the skin of people who use antibiotic cleansers because it reduces
bacterial competition for skin resources.*

What methods (and very generally what materials) will you use to test this hypothesis?
**Remember** that your test **only** has to address your hypothesis.