Laboratory Practical Stations. Answer the questions at each station. (50%, 2-4% per station)

1. a. ___________________________________________ 14. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

2. a. ___________________________________________ 15. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

3. a. ___________________________________________ 16. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

4. a. ___________________________________________ 17. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

5. a. ___________________________________________ 18. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

6. a. ___________________________________________ 19. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

7. a. ___________________________________________ 20. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

8. a. ___________________________________________ 21. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

9. a. ___________________________________________ 22. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

10. a. ___________________________________________ 23. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

11. a. ___________________________________________ 24. a. ___________________________________________
b. ___________________________________________  b. ___________________________________________

12. a. ___________________________________________ 24.a. and 24.b. are worth double (2% each)
b. ___________________________________________

13. a. ___________________________________________  
b. ___________________________________________
Hypothesis Evaluation. Is there statistically significant support for each of the following hypotheses? (6%, 2% each)

1. Hypothesis = *Penicillium notatum* grows faster under warmer temperatures.
   - **Data** = Mean colony diameter of *P. notatum* after 3 days at 25°C = 4.8 cm, Mean colony diameter of *P. notatum* after 3 days at 30°C = 4.4 cm,
   - **p value** = 0.040
   - Circle one: Hypothesis Supported   Hypothesis NOT Supported

2. Hypothesis = Bacterial species diversity is greater on the upper surface of leaves than on the lower surface of leaves of white oak trees.
   - **Data** = Mean number of species per swab of leaf upper surface = 4.1, Mean number of species per swab of leaf lower surface = 5.7,
   - **p value** = 0.044
   - Circle one: Hypothesis B Supported   Hypothesis B NOT Supported

3. Hypothesis = Squirrels are more common on Regis’ campus than in the surrounding neighborhoods.
   - **Data** = Mean number of squirrels per 10 m² area on Regis campus = 1.2, Mean number of squirrels per 10 m² area on Regis campus = 0.6,
   - **p value** = 0.500
   - Circle one: Hypothesis B Supported   Hypothesis B NOT Supported

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

1. Bacterial Lawn:

2. Bacterial Streaking (also indicate the goal of this procedure):

3. Forb:

4. Petiole:

5. Positive Control:
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. (8%)
   b) Create a **properly labeled graph** of the allele frequency of one of the alleles (NOT both) over time. (4%)
   c) Propose a plausible population genetic/evolutionary explanation for what you see happening (or not happening) to the allele and genotype frequencies over time. (2%)

<table>
<thead>
<tr>
<th>generations</th>
<th>BB</th>
<th>Bb</th>
<th>bb</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>20</td>
<td>8</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Experimental Design. (10%)
Use the back of this page to design a **rigorous but relatively simple** experiment with appropriate control(s) and replication to test a hypothesis of your construction. Rollie pollies (small terrestrial crustaceans) walk when they are not in their usual habitat under rocks or other debris. Once under a rock the rollie pollies stops walking. Develop a hypothesis concerning the stimulus associated with “being under a rock” that stops walking behavior in rollie pollies. Keep in mind that at being under a rock means experiencing the conditions of low/no light, lower temperature, and higher humidity.

(A) What is your hypothesis and why did you propose it?

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