**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Block: \_\_\_\_\_\_**

**DNA Fingerprinting: Lab Investigation**

**(April 23, 2014)**

1. What electrical charge does DNA have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(1 pt)**

2. What causes the DNA fragments in the wells to move through the gel? Don’t be vague. Explain. **(2 pts)**

3. What makes up the “bands” that form in the gel? **(1 pt)**

4. Each individual person, except \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, has a unique DNA sequence. **(1 pt)**

5. The power of DNA fingerprinting is that it can isolate one individual. How

does it do that? **(1 pt)**

6. What are two reasons that the microtubes are centrifuged? Hint: The answer is in two separate places. Read and search carefully. **(2 pts)**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Why were the microtubes of the crime scene and suspects put in a water bath at 37**o** C? In other words, what is significant about 37**o** C? Be complete. **(2 pts)**

8. Why do you think that it is important to treat all the samples of DNA (ie. crime scene & 5 suspects) exactly the same way? Think about it logically. **(2 pts)**

9. What are two reasons that you add loading dye to the DNA samples? **(2 pts)**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. When you pipette each of the six samples of DNA into the gel electrophoresis gel, why do you use a separate tip for each sample? **(1 pt)**

11. Why is it important to note the orientation/order of the six samples of DNA?

**(1 pt)**

12. After ejecting the DNA into the gel wells, what do you have to remember when removing the pipette out of the well? In other words, what can’t you do AND why? **(2 pts)**

13. Which suspect’s DNA matched the crime scene DNA? **(1 pt) \_\_\_\_\_\_\_\_\_\_\_\_\_**

14. If there is a match between the crime scene DNA and the suspect’s DNA, does that prove that the suspect committed the crime? **Why**? **(2 pts)**

15. The restriction enzyme *BAM HI*, “recognizes” the base sequence of **GGATCC**. On the DNA strand below, if *BAM HI* was used to cut the DNA, show where the DNA would be cut (Use lines between the appropriate bases). **(2 pts)**

**G G A T C C G A A T T C C C T T G A A G T T C G G A T C C G A A T T C**

**C C T A G G C T T A A G G G A A C T T C A A G C C T A G G C T T A A G**

* How many pieces of DNA fragments would there be? \_\_\_\_\_\_\_\_\_\_\_ **(1 pt)**

16. How do you know that an electrical current is running through the gel box?  **(1 pt)**

17. Sequence the following 5 steps as they relate to the protocol in our DNA Fingerprinting Lab (1 is the first step, 2 is the second, and so on). **(5 pts)**

\_\_\_\_\_\_\_ Stain the gel overnight by immersing it in staining solution.

\_\_\_\_\_\_\_ Pipette the loading-dye into each of the 6 vials of DNA.

\_\_\_\_\_\_\_ Cut all the DNA with the same restriction enzyme.

\_\_\_\_\_\_\_ Secure the lid of the electrophoresis box and turn the electricity on.

\_\_\_\_\_\_\_ Pipette each suspects DNA into separate wells in the gel.