Crime Busters 2019 SSSS Answer Sheet

Student Name:_____________________________________________________________

School Name:_______________________________________________________________

Points Scored: (_____/98)
### Qualitative Answers

Fill out the chart based on the evidence provided

<table>
<thead>
<tr>
<th>Sample</th>
<th>Identification (2pts per substance) (__/32)</th>
<th>Who does it implicate? (1pt max per sample) (__/9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>P2</td>
<td></td>
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<td>P3</td>
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<td>P4</td>
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<td>N/A</td>
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<td>P5</td>
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<tr>
<td>Mix1</td>
<td></td>
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<tr>
<td>Mix2</td>
<td></td>
<td>N/A</td>
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<tr>
<td>Mix3</td>
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<tr>
<td>L1</td>
<td></td>
<td>N/A</td>
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<td>L2</td>
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<td>M1</td>
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<tr>
<td>M2</td>
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</tbody>
</table>

### Qualitative Concept Questions:

1. Write the common name of these chemical formulas: (1pt each)
   a. \( C_{27}H_{48}O_{20} \)  
   b. \( C_{19}H_{13}O_{2} \)  
   c. \( C_{16}H_{17}NaO_{14} \)

2. What carbohydrate(s) reacts to iodine to create a blue/black color? (1pt)
   a. Simple Sugars
   b. Starch
   c. Fiber
Polymer Testing/Natural and Man-made Substances

Fill out the chart based on the evidence provided as animal, vegetable, or synthetic for fibers; human, dog, or cat for hairs; and as one of the 7 plastic types.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Identification (1pt each) (__/7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td></td>
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<tr>
<td>F2</td>
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<tr>
<td>H1</td>
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<td>PL1</td>
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<td>PL2</td>
<td></td>
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<tr>
<td>PL3</td>
<td></td>
</tr>
</tbody>
</table>

Polymer Testing/Natural and Man-made Substances Concept Questions

1. True or False: Melanin is located in the medulla _________________________ (1pt)

2. Identify the fiber as animal, vegetable, or synthetic (1pt overall)
   a. Nylon __________________________
   b. Cashmere ______________________
   c. Jute ___________________________

3. List chain growth polymers __________________________ (½ a pt per each one)
1. Who most likely wrote the message? (0.5 point for lab, 2 points for non lab)
   _______________________________________

2. What are the two phases involved in chromatography? (1pt lab, 2pts non lab)
   _______________________________
Crime Scene Physical Evidence

Fingerprints
1. Identify the fingerprint pattern for each of the right hand thumb prints given as one of the three basic patterns. (1pt per each fingerprint)
   a. Derrick Briwin ________________________________
   b. Robert Keeling ________________________________
   c. Jane Boron ________________________________
   d. Nancy Zhon ________________________________
2. Match each crime scene print to the person’s specific finger (1pt each)
   a. _______________________________
   b. _______________________________
   c. _______________________________
3. Write the fingerprint type next to the definition given. (1pt each)
   a. Invisible without development _______________________________
   b. Leaves print with blood or substance________________________
   c. Print is malleable_______________________________________________

Blood Spatters and Blood Types
1. At what cardinal direction did the blood spatter hit the seat? (1pt) _______________
2. At what velocity did the blood spatter hit the seat? (1pt)
   a. Low Velocity
   b. Medium Velocity
   c. High Velocity
3. Label the parts of the blood spatter (1pt each):
   a. ________________
   b. ________________
4. List out the blood types of the suspects and from the crime scene.
   a. Crime Scene ________________
   b. Derrick Briwin ________________
   c. Robert Keeling ________________
   d. Jane Boron ________________
   e. Nancy Zhon ________________

Soil
1. What soil sample from the suspects most closely matched the sample from the crime scene? (1pt) ________________________________
2. What type of minerals result in a red or yellow soil? (1pt) ________________________________