Chapter 8: Forensic Serology & Blood Spatter Reading Guide

Name: ________________________________

**Vocabulary** – *Use the glossary to define the following words before reading this chapter:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Angle of incidence (impact)</td>
<td>Antibodies</td>
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<tr>
<td>Anticoagulant</td>
<td>Antigens</td>
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<tr>
<td>Back spatter</td>
<td>Blood Stain</td>
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<tr>
<td>Blood Spatter Pattern</td>
<td>Forensic serology</td>
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<tr>
<td>Serum</td>
<td>Surface tension</td>
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<tr>
<td>Universal Precautions</td>
<td>Viscosity</td>
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Answer the following questions using information from your reading in this chapter:

1. Based on the information in the case study about Darlie Router, do you think she was guilty of the murder of her children? What evidence leads you to believe this? (Site 3 pieces of evidence discussed.)

2. Blood accounts for about ____% of total body weight, or ______ L of blood for males & ______ L of blood for females.

3. In addition to blood, a forensic serologist also analyzes what other substances?

4. Red blood cells outnumber white blood cells by how many?

5. In forensic law, blood is considered _______________ evidence. However there is the potential for it to be considered _______________ evidence by using it to create a DNA profile.

6. What was Karl Landsteiner's contribution to the field of forensic serology?

7. Fill in the chart detailing information about the blood types of an individual.

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Antigens on Red Cells</th>
<th>Antibodies in Serum</th>
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</thead>
<tbody>
<tr>
<td>A</td>
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<td>B</td>
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<td>AB</td>
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8. What are the steps in the process of bloodstain characterization?
9. What is the precipitin test used to identify?

10. What does it mean when scientists call someone a “secretor”?

11. When determining viscosity, what liquid is everything compared to, and what is the value of this fluid?

12. How is surface tension measured?

13. Give 2 reasons that surface tension is important for bloodstain pattern analysis.


15. Compare the density of blood and the density of plasma to the density of water.

16. What force causes blood retain a spherical shape as it flies through the air?

17. Compare the appearance of a blood droplet that strikes a smooth surface versus a droplet that strikes a rough surface.

18. Summarize the 4 phases of impact:
   a. Contact / Collapse:
   b. Displacement:
   c. Dispersion:
   d. Retraction:

19. Compare the diameter of a droplet falling from 100 cm and one falling from 10 cm.

20. What is low velocity (blood) force usually the result of?

21. What is the relative size of a blood stain produced by low velocities?

22. How is blood-trail motion defined?

23. How fast does medium velocity force move?

24. What types of “activities” might medium velocity spatter result from?

25. At what speed does high velocity spatter move at?
26. Describe the other features (besides the long axis of a stain) that can indicate the direction a blood stain was traveling.

27. What parts of a stain are not measured when measuring the length of a stain?

28. What are the names of the trigonometric functions involved in calculating the angle of impact?

29. What is the formula for determining the angle of impact?

30. List the steps involved in calculating the angle of impact:

31. Define what the point of convergence is, and how it is determined.

32. Define area of origin.

33. List / summarize the steps involved in determining the area of origin.

34. Summarize the general categories of bloodstains:
   a. Drip Patterns:
   b. Transfer Patterns:
   c. Spatter Patterns:
   d. Large Volumes: