

Serology Reading Questions - Answers

(From: GVL)

Go to http://www.trutv.com/library/crime/criminal_mind/forensics/serology/2.html

Read the information presented in the eight short chapters and answer the following questions.

1. What are Paul Uhlenhuth's contributions to the study of blood?
He could distinguish blood from other substances, as well as mark the difference between human and animal blood
2. What is serology?
The analysis of the properties and effects of serums (blood, semen, saliva, sweat, or fecal matter)
3. What are Karl Landsteiner's contributions to the study of blood?
He named the Blood types and standardized the groups.
4. How can blood be identified as coming from a male or female?
Female blood cells contain a chromosome-related structure that set them apart from those of males, and they named this the Barr Body.
5. Describe each of the presumptive tests for blood, including how they are done and what positive results would look like.
 - The Kastle-Meyer Color Test uses a solution of phenolphthalein and hydrogen peroxide on a piece of filter paper, and when blood of any quantity is present, it turns pink. However, it also turns pink in the presence of potatoes or horseradish, so care must be taken at the scene.
 - Luminol is sprayed across the scene because it reacts to blood by making it luminescent. It only takes about five seconds. The procedure requires that the room be considerably darkened in order to see the faint bluish glow, and the intensity of the glow increases proportionately to the amount of blood present. It works even with old blood or diluted stains, and can illuminate smear marks where blood has been wiped away. However, there is one problem with this test: luminol can destroy the properties of the blood that investigators need for further testing. Its use is limited to proving that blood is present even if not visible.
 - Takayama and Teichmann tests. Both add specific chemicals to the blood to make it form crystals with hemoglobin derivatives. These tests are also sensitive to other materials that may be present in a bloodstain.
6. Describe tests used to tell if blood is human or nonhuman.
The Precipitin test to determine whether the blood is of animal or human origin.
7. What are the Glaister's categories of blood spatter patterns.
Drops on a horizontal surface; Splashes, from blood flying through the air and hitting a surface at an angle; Pools around the body, which can show if it's been dragged; Spurts from a major artery or vein; and Smears left by movement of a bleeding person.

8. How can the surface affect blood drop analysis?

The disruption of a blood drop on impact with a surface is directly related to the texture of the surface. "A smooth surface, such as glass, will provide the recording of a stain with clean edges and shapes of proper geometric proportion. A rough surface, like concrete, will break the surface tension irregularly and generate a star burst, or spinning effect.

9. What are the five general rules accepted about blood spatter?

1. If blood falls a short distance — around twelve inches — at a 45-degree angle, the marks tend to be circular;
2. If blood drops fall several feet straight down, the edges may become crenellated, and the farther the distance from the source to the surface, the more pronounced the crenellation;
3. A height of six feet or more can produce small spurts that radiate out from the main drop;
4. If there are many drops less than an eighth of an inch across, with no larger drop, then it may be concluded that the blood spatter probably resulted from an impact; and
5. If the source was in motion when the blood leaked or spurted, or if the drops flew through the air and hit an angled surface, the drops generally look like stretched-out exclamation marks. The end of the stain that has the smallest size blob indicates the direction in which the source was moving.

10. Explain how blood spatter analysis was used in the Backhouse case.

This is in your own words..

11. Describe the blood evidence in the OJ Simpson case.

A bloodstain on the door of his white Ford Bronco and a trail of blood leading up to the house.

12. How was the handling of the evidence important in the OJ Simpson case?

careless

13. Describe the evidence in the Chamberlain case.

Footprints leading to the road and beyond.

Baby Azaria's clothing:

Her undershirt was inside out

Booties were neatly laced up inside the jumpsuit. (On the neck of the jumpsuit and undershirt were bloodstains that were later thought to be consistent with the type of stain that would result from a knife cut, not a bite. There were also no tooth marks on the clothing.)

The blood of an infant on the seats and on

A pair of scissors in the vehicle.

14. Describe the blood analysis used in the Campano case.

1. A hema stick (microcrystal test)

This stick is coated with a blood-sensitive chemical which, when touched to a substance and then sprayed with distilled water, indicates the presence of blood. Later in the lab, they determined that it was human blood.

2. Luminol

Although the house appeared to be spotless, when this highly sensitive chemical was sprayed

around the room in the dark, it illuminated so many areas that it was clear that a virtual bloodbath had taken place.

3. Blood Volume Test through stain recreation

On the same rug, they poured the amount of blood that would have been needed to make a stain the same size as the one they found, and then estimated that a person the size of Caren Campano would have lost at least 40 % of her blood. She could not have survived that.

4. DNA analysis – Reverse paternity test

Although Caren's father was deceased and they had no samples of her DNA, they took blood samples from as many members of her family as they could find, hoping for a partial match with all of them. Finding it, the police had enough for an arrest on the suspicion of murder.

15. Describe how blood evidence was used in the Perry case in Kamiah, Idaho.

Remember these while describing in your own words:

Blood was coming from the back of the frail man's head;

The bed, complete with the same bloody sheets, (the blood-spattered headboard);

Craig Perry's pants were also entered into evidence, as they bore blood spatter as well.