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| 1. Blood has been studied to one degree or another for thousands of years.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 |

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| 2. In 1728, Sir William Harvey determined that there was a continuous circulation of blood within the body.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Challenging |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 |

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| 3. Sir William Osler discovered platelets in 1874.

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|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | True |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 |

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| 4. The presence or absence of antigens on white blood cells determines a person's blood type.

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 5. Blood is the circulating tissue consisting of two types of cells: red blood cells and platelets.

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| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

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| *ANSWER:* | False |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 |

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| 6. Red blood cells:

|  |  |  |
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|   | a.  | carry respiratory gases, mainly oxygen and carbon dioxide. |
|   | b.  | fight disease and foreign invaders. |
|   | c.  | aid in blood clotting. |
|   | d.  | are involved in repairing damaged blood cells. |

|  |  |
| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 |

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| 7. The immune system functions to protect our bodies by identifying cells or molecules that are foreign, such as:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | viruses. | b.  | bacteria. |
|   | c.  | parasites. | d.  | All of these choices. |

|  |  |
| --- | --- |
| *ANSWER:* | d |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 |

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| 8. White blood cells secrete proteins:

|  |  |  |
| --- | --- | --- |
|   | a.  | known as antibodies, which assist in the immune response. |
|   | b.  | known as viruses, which assist in the immune response. |
|   | c.  | known as bacteria, which assist in the immune response. |
|   | d.  | known as parasites, which assist in the immune response. |

|  |  |
| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 |

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| 9. The three components of blood, red blood cells, white blood cells, and platelets, are carried throughout the body in:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | antibodies. | b.  | plasma. |
|   | c.  | basophil. | d.  | monocytes. |

|  |  |
| --- | --- |
| *ANSWER:* | b |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 |

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| 10. Blood typing is less expensive and quicker for analyzing blood evidence than DNA profiling.  Since many different people share the same type, this blood evidence is considered to be:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | individual evidence. | b.  | class evidence. |
|   | c.  | trace evidence. | d.  | biological evidence. |

|  |  |
| --- | --- |
| *ANSWER:* | b |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 11. In 1900, Karl Landsteiner found that the blood from one person:

|  |  |  |
| --- | --- | --- |
|   | a.  | did not always freely mix with blood from another person. |
|   | b.  | always freely mixes with blood from another person. |
|   | c.  | always freely mixes with blood from another group of persons. |
|   | d.  | None of these choices. |

|  |  |
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| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 12. The presence or absence of particular proteins, found embedded within a cell or plasma membranes of red blood cells, determines a person’s:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | DNA. | b.  | blood type. |
|   | c.  | Rh factor. | d.  | surface proteins. |

|  |  |
| --- | --- |
| *ANSWER:* | b |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Challenging |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 13. Each blood type is determined by:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | a DNA reaction test. | b.  | an antibody reaction test. |
|   | c.  | a protein reaction test. | d.  | a RF factor reaction test. |

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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Challenging |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 14. A and B proteins are found on the surface of some red blood cells.  If a person’s blood contains both the A and the B proteins, then he or she has:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | type A blood. | b.  | type B blood. |
|   | c.  | type AB blood. | d.  | type O blood. |

|  |  |
| --- | --- |
| *ANSWER:* | c |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 15. In 1940, Alexander Weiner, working with Rhesus monkeys, noticed another type of red cell protein. This red cell protein, called RH factor, is on the red blood cells of:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | 85 percent of the human population.   | b.  | 75 percent of the human population.   |
|   | c.  | 65 percent of the human population.   | d.  | 55 percent of the human population.   |

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| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 16. Of the four main human blood types using the ABO system, the largest percentage of the U.S. population is made up of:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | Type O. | b.  | Type A. |
|   | c.  | Type B. | d.  | Type AB. |

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| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 17. What term describes the clumping of red blood cells?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | agglutination | b.  | antigens |
|   | c.  | eosinophil | d.  | lymphocyte |

|  |  |
| --- | --- |
| *ANSWER:* | a |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Easy |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01FSFI.BERT.2.LO: 8-03 - LO: 8-03 |

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| 18. What happens to the shape of a blood droplet as the angle of release changes from a 90-degree drop toward a 10-degree drop?

|  |  |  |
| --- | --- | --- |
|   | a.  | It becomes more wider than long. |
|   | b.  | It becomes more longer than wide. |
|   | c.  | It becomes more circular. |
|   | d.  | It has more spines. |
|   | e.  | ​It is difficult to predict, as it depends on the type of surface the droplet lands on. |
|   | f.  | a and c only |
|   | g.  | ​b and d only |
|   | h.  | ​None of the above. |

|  |  |
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| *ANSWER:* | b |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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| 19. Which type of bloodstain pattern suggests that bloody hair was dragged across the floor?

|  |  |  |
| --- | --- | --- |
|   | a.  | wipe |
|   | b.  | arterial gush |
|   | c.  | swipe |
|   | d.  | transfer pattern |

|  |  |
| --- | --- |
| *ANSWER:* | c |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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| 20. Today blood splatter evidence is used to explain events:

|  |  |  |
| --- | --- | --- |
|   | a.  | at all death scenes. |
|   | b.  | at vehicular homicide scenes. |
|   | c.  | during crime-scene analysis.   |
|   | d.  | ​None of these choices. |
|   | e.  | ​All of these choices. |

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| *ANSWER:* | c |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Challenging |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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| 21. Given blood spatter patterns, it is possible to determine the direction the blood was traveling, the angle of impact, and the point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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| --- | --- |
| *ANSWER:* | of origin of the blood |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Challenging |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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| 22. If any of the blood does overcome cohesion and separate from the main droplet of blood, it will form small secondary droplets known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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| *ANSWER:* | satellites |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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| 23. If blood lands on a porous surface, such as wood or ceiling tile, then the edge of the drop of blood may form extensions or small \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| *ANSWER:* | spines |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
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| 24. The attraction between molecules of unlike substances (like blood and ceiling tile) is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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| --- | --- |
| *ANSWER:* | adhesion |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Average |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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| 25. A medium-velocity-sized blood splatter (1 to 4 mm) is caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| *ANSWER:* | beatings or stabbings |
| *POINTS:* | 1 |
| *DIFFICULTY:* | Challenging |
| *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02FSFI.BERT.2.LO: 8-07 - LO: 8-07FSFI.BERT.2.LO: 8-08 - LO: 8-08FSFI.BERT.2.LO: 8-09 - LO: 8-09 |

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