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| 1. Blood has been studied to one degree or another for thousands of years.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *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.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *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.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *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 |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 FSFI.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.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *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:   |  |  |  | | --- | --- | --- | |  | 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: 8-01 FSFI.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. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 FSFI.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: 8-01 FSFI.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. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Challenging | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 FSFI.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: 8-01 FSFI.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. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 FSFI.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. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-01 - LO: 8-01 FSFI.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: 8-01 FSFI.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. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.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: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.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. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *DIFFICULTY:* | Challenging | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | of origin of the blood | | *POINTS:* | 1 | | *DIFFICULTY:* | Challenging | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | satellites | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.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 | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.BERT.2.LO: 8-09 - LO: 8-09 | |

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| 24. The attraction between molecules of unlike substances (like blood and ceiling tile) is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | adhesion | | *POINTS:* | 1 | | *DIFFICULTY:* | Average | | *LEARNING OBJECTIVES:* | FSFI.BERT.2.LO: 8-02 - LO: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.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: 8-02 FSFI.BERT.2.LO: 8-07 - LO: 8-07 FSFI.BERT.2.LO: 8-08 - LO: 8-08 FSFI.BERT.2.LO: 8-09 - LO: 8-09 | |