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| 1. Because DNA is composed of alternating sugar and phosphate molecules, DNA is known as a double helix.

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

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| 2. Most females have one X and one Y (XY) sex chromosome.

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

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| 3. To calculate the percentage of people who have a particular allele, population studies are conducted to collect data.

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

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| 4. Humans share common ancestors. Therefore, the DNA STR profile of all humans is the same.

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

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| 5. mtDNA is used to trace ancestry through the female line.

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

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| 6. Except for identical twins, no two people on earth have the same:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | physical characteristics. | b.  | DNA. |
|   | c.  | blood group. | d.  | skeletal type. |

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| 7. People are always shedding cells. Therefore DNA can be recovered from:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | skin cells. | b.  | saliva. |
|   | c.  | semen. | d.  | a and b only. |
|   | e.  | ​a and c only. | f.  | a, b, and c. |

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| 8. The term that describes a picture of homologous pairs of human chromosomes is:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | karyotype. | b.  | genetics. |
|   | c.  | archetype. | d.  | a and b only. |
|   | e.  | ​All of these choices. | f.  | None of these choices. |

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| 9. The 95 percent of noncoding DNA is involved in:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | blueprint production. | b.  | genetic material. |
|   | c.  | cell regulation. | d.  | DNA fingerprinting. |

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| 10. If one person has two alleles that are the same for a specific STR, then that person is considered to have:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | rare occurring alleles. | b.  | heterozygous genotypes. |
|   | c.  | frequently occurring alleles. | d.  | homozygous genotypes. |

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| 11. James Watson and Francis Crick received the 1953 Nobel Prize for their work on describing the structure of DNA as:

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| --- | --- | --- |
|   | a.  | a double helix that resembles a twisted ladder. |
|   | b.  | a helix that resembles a twisted ladder. |
|   | c.  | a triple helix that resembles a twisted ladder. |
|   | d.  | None of these choices. |

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| 12. Which chromosomes have the same shape and contain the same genes?

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| --- | --- | --- | --- | --- |
|   | a.  | genes | b.  | autosomes |
|   | c.  | (XX) | d.  | introns |

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| 13. DNA in chromosomes is called

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | DNA. | b.  | DNA chromosomes. |
|   | c.  | nuclear DNA. | d.  | structural DNA. |

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| 14. Alternate forms of a gene are called:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | chromosomes. | b.  | DNA. |
|   | c.  | alleles. | d.  | RNA. |

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| 15. (GAAT) (GAAT) (GAAT) (GAAT) is an example of:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | restriction fragments.  | b.  | DNA fingerprinting. |
|   | c.  | PCR. | d.  | STR. |

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| 16. The total amount of DNA in a cell, which is contained in the cell's nucleus (nuclear DNA) and mitochondria (mtDNA), is called the human:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | genome. | b.  | gene. |
|   | c.  | allele. | d.  | RNA. |

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| 17. Approximately how many base pairs are in the human body?

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| --- | --- | --- | --- | --- |
|   | a.  | 6 million base pairs. | b.  | 6 billion base pairs. |
|   | c.  | 6 thousand base pairs | d.  | 6 trillion base pairs. |

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| 18. In 1984, Dr. Alec Jeffreys at the University of Leicaster observed that DNA from different individuals contains different polymorphisms.  His laboratory developed a technique for isolating and analyzing these variable areas that is known as:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | DNA quantifying, or DNA profiling. | b.  | DNA fingerprinting, or DNA profiling. |
|   | c.  | DNA sorting, or DNA profiling. | d.  | DNA investigating, or DNA profiling. |

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| 19. Which method is used to identify different STR markers?

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| --- | --- | --- | --- | --- |
|   | a.  | x-raying DNA samples | b.  | extracting the mtDNA from the gene |
|   | c.  | adding fluorescent dyes to the PCR reaction | d.  | calculating the allele frequency |

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| 20. Ninety-five percent of DNA is non-coding. What term describes non-coding DNA that acts as genetic "on-an-off" switches?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | karotypes | b.  | exons |
|   | c.  | introns | d.  | base pairs |

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| 21. What material is used to isolate and cut DNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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|  | restriction enzymes |
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| 22. Name a method of separating molecules, such as DNA, based on their size. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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| electrophoresis |
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| 23. The DNA of every organism on earth is made of the same four \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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|  | nitrogeneous bases |
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| 24. Amplifying trace samples of DNA is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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| PCRpolymerase chain reaction |
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| 25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are variable regions of DNA that repeat.

|  |  |
| --- | --- |
|  | STRshort tandem repeat |
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