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| 1. Which of the following is NOT a practice that would be employed by a scientist?   |  |  |  | | --- | --- | --- | |  | a. | testing ideas by experimentation | |  | b. | organizing findings in specific ways | |  | c. | predicting the outcome of an experiment and then not testing the prediction | |  | d. | trying to explain how nature works | |  | e. | making physical models to explain the behavior of matter |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 2. Which of the following is NOT normally a part of scientific inquiry?   |  |  |  | | --- | --- | --- | |  | a. | making observations | |  | b. | philosophizing | |  | c. | suggesting an explanation | |  | d. | testing hypotheses | |  | e. | performing experiments |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 3. Which of the following statements is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | The scientific method is a way of looking at the world that is different from nonscientific forms of inquiry. | |  | b. | The scientific method does not allow for the use of inferences, and everything must be proven by direct observation. | |  | c. | A theory is a guess about the behavior or properties of matter. | |  | d. | Scientists must isolate and study one variable at a time when performing experiments. | |  | e. | A behavior of matter that has universal validity is called a natural law. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 4. Which of the following observations does NOT relate specifically to the law of definite proportions?   |  |  |  | | --- | --- | --- | |  | a. | Pure water is composed of the elements oxygen and hydrogen in a mass ratio of 8 to 1. | |  | b. | Any sample of a given compound always contains the same proportions by mass of the component elements. | |  | c. | The mass of the products of a chemical reaction is equal to the mass of the starting materials of the reaction. | |  | d. | When a metal reacts with oxygen, the oxygen content of the products is fixed at one or two values. | |  | e. | When water is broken down into its elements by electrolysis, elemental oxygen and hydrogen are formed in an 8 to 1 mass ratio. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 5. Which of the following statements regarding fundamental chemical laws is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | John Dalton’s experimental results led to the law of conservation of mass. | |  | b. | Antoine Lavoisier’s experiments showed that the mass of the products of a chemical reaction equals the mass of the reacting substances. | |  | c. | When wood is burned, the ashes weigh less than the original wood, but this is not a violation of the law of conservation of matter. | |  | d. | John Dalton observed that carbon and oxygen can form two compounds, one of which has twice as much oxygen per gram of carbon as the other. | |  | e. | Joseph Proust’s findings regarding the composition of various compounds led to the law of definite proportions. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 6. Which of the following statements regarding atoms and atomic theory is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | Elements are made of tiny particles called atoms. | |  | b. | The atoms of different elements are different in some fundamental way. | |  | c. | Chemical compounds are formed when atoms of different elements combine with each other. | |  | d. | An element is a substance that cannot be broken down into simpler substances. | |  | e. | By the 1700s, all chemists believed that elements were made of atoms. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory | |

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| 7. Which of the following statements regarding atoms and atomic theory is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | Antoine Lavoisier discovered that matter is not gained or lost in a chemical reaction. | |  | b. | Joseph Proust showed that when elements combine to form new substances, they do so in specific mass ratios. | |  | c. | According to John Dalton’s observations, when water forms, the mass ratio of hydrogen to oxygen is variable. | |  | d. | John Dalton’s atomic theory stated that all atoms of a given element are identical. | |  | e. | John Dalton discovered that in two different compounds of carbon and oxygen, the ratio of oxygen to carbon was two times higher in one compound than the other. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory | |

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| 8. Which of the following is NOT part of Dalton’s atomic theory?   |  |  |  | | --- | --- | --- | |  | a. | Elements are made of tiny particles called atoms. | |  | b. | All atoms of a given element are identical to each other. | |  | c. | Atoms of one element can be changed to atoms of another element in a chemical reaction. | |  | d. | Atoms combine in fixed ratios to form chemical compounds. | |  | e. | Chemical reactions involve a reorganization of the atoms in the starting materials. |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory | |

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| 9. Which of the following statements regarding early atomic experiments is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | J. J. Thomson postulated that the “ray” that was observed in cathode ray tubes was a stream of negatively charged particles. | |  | b. | J. J. Thomson reasoned that since electrons could be produced from electrodes made of different metals, that all atoms must contain electrons. | |  | c. | J. J. Thomson postulated that an atom consists of a diffuse cloud of positive charge with negative electrons randomly embedded in it. | |  | d. | Ernest Rutherford’s experiment necessitated a revision of Thomson’s plum pudding model of the atom. | |  | e. | All of these statements are correct. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models | |

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| 10. Which of the following statements regarding early atomic experiments is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | J. J. Thomson postulated that the “ray” that was observed in cathode ray tubes was a stream of negatively charged particles. | |  | b. | Ernest Rutherford was not surprised by the result of his experiment with the metal foil and α-particles. | |  | c. | J. J. Thomson postulated that an atom consists of a diffuse cloud of positive charge with negative electrons randomly embedded in it. | |  | d. | Ernest Rutherford’s experiment necessitated a revision of Thomson’s plum pudding model of the atom. | |  | e. | Henri Becquerel’s discovery of radioactivity was critical to the experiments that helped elucidate the structure of the atom. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models | |

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| 11. The subatomic particles studied by chemists that make up the atom include all of the following except the \_\_\_\_\_\_\_\_\_\_.   |  |  |  | | --- | --- | --- | |  | a. | proton | |  | b. | All of these choices are part of the atom. | |  | c. | electron | |  | d. | neutron | |  | e. | phlogiston |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 12. In any neutral atom,   |  |  |  | | --- | --- | --- | |  | a. | the number of electrons equals the number of protons. | |  | b. | the number of electrons is less than the number of protons. | |  | c. | the number of electrons is greater than the number of protons. | |  | d. | the number of electrons is equal to the number of neutrons. | |  | e. | the number of neutrons is always equal to the number of protons. |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 13. Which of the following statements regarding the nucleus of the atom is incorrect?   |  |  |  | | --- | --- | --- | |  | a. | The nucleus is the central core of the atom. | |  | b. | The nucleus contains the electrons and the protons. | |  | c. | The nucleus contains most of the mass of the atom. | |  | d. | The nucleus contains the neutrons. | |  | e. | The nucleus contains the neutrons and protons, as well as most of the mass of the atom. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 14. The number of \_\_\_\_\_\_\_\_\_\_ determines the identity of an element.   |  |  |  | | --- | --- | --- | |  | a. | electrons | |  | b. | protons | |  | c. | neutrons | |  | d. | neutrons plus protons | |  | e. | protons plus electrons |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 15. Consider the element indium, atomic number 49. The nucleus of an atom of indium-112 contains   |  |  |  | | --- | --- | --- | |  | a. | 49 protons, 63 neutrons, 49 electrons. | |  | b. | 49 protons, 49 neutrons. | |  | c. | 49 protons, 49 alpha particles. | |  | d. | 49 protons, 63 neutrons. | |  | e. | 49 protons, 112 neutrons. |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 16. has \_\_\_\_\_.   |  |  |  | | --- | --- | --- | |  | a. | 20 protons, 20 neutrons, and 18 electrons | |  | b. | 22 protons, 20 neutrons, and 20 electrons | |  | c. | 20 protons, 22 neutrons, and 18 electrons | |  | d. | 22 protons, 18 neutrons, and 18 electrons | |  | e. | 20 protons, 20 neutrons, and 22 electrons |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 17. Which of the following statements is (are) true?   |  |  |  | | --- | --- | --- | |  | a. | and have the same number of neutrons. | |  | b. | and are isotopes of each other because their mass numbers are the same. | |  | c. | has the same number of electrons as . | |  | d. | Two of the statements are true. | |  | e. | All of the statements are true. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 18. A species with 12 protons and 10 electrons is \_\_\_\_\_.   |  |  |  | | --- | --- | --- | |  | a. | Ne2+ | |  | b. | Ti2+ | |  | c. | Mg2+ | |  | d. | Mg | |  | e. | Ne2– |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 19. The numbers of protons, neutrons, and electrons in are   |  |  |  | | --- | --- | --- | |  | a. | 20 p, 19 n, 19 e. | |  | b. | 20 p, 19 n, 20 e. | |  | c. | 19 p, 20 n, 20 e. | |  | d. | 19 p, 20 n, 19 e. | |  | e. | 19 p, 20 n, 18 e. |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 20. An ion is formed   |  |  |  | | --- | --- | --- | |  | a. | by either adding or subtracting protons from the atom. | |  | b. | by either adding or subtracting electrons from the atom | |  | c. | by either adding or subtracting neutrons from the atom. | |  | d. | all of these are true. | |  | e. | two of these are true. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 21. All of the following are true EXCEPT   |  |  |  | | --- | --- | --- | |  | a. | ions are formed by adding electrons to a neutral atom. | |  | b. | ions are formed by changing the number of protons in an atom's nucleus. | |  | c. | ions are formed by removing electrons from a neutral atom. | |  | d. | an ion has a positive or negative charge. | |  | e. | metals tend to form positive ions. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.5 - Atomic Structure | |

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| 22. The formula of water, H2O, suggests   |  |  |  | | --- | --- | --- | |  | a. | there is twice as much mass of hydrogen as oxygen in each molecule. | |  | b. | there are two hydrogen atoms and one oxygen atom per water molecule. | |  | c. | there is twice as much mass of oxygen as hydrogen in each molecule. | |  | d. | there are two oxygen atoms and one hydrogen atom per water molecule. | |  | e. | none of these are correct. |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 23. A natural law summarizes what happens in a set of experiments.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 24. Scientific thinking is useful only for science and has no application in everyday life.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 25. A theory (model) is an attempt to explain some aspect of natural behavior.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. | |

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| 26. The law of conservation of mass is an example of a scientific theory.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. | |

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| 27. Once a scientific theory (model) is formulated, it can never be changed.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. | |

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| 28. A natural law is a rule that is enacted by a group of influential scientists.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 29. The law of conservation of mass states that mass is neither created nor destroyed in a chemical reaction.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 30. Scientific theories are explanations of natural behavior.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.6 - Models (Theories) Are Explanations of Why Nature Behaves in a Particular Way. | |

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| 31. The first “chemist” to perform truly quantitative experiments was J. J. Thomson.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory | |

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| 32. John Dalton’s atomic theory accounted for the existence of different isotopes of elements.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory | |

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| 33. John Dalton’s atomic theory stated that chemical compounds are formed when atoms of different elements combine with each other.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.3 - Dalton’s Atomic Theory | |

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| 34. J. J. Thomson reasoned that since electrons could be produced from electrodes made of different metals, then all atoms must contain electrons.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models | |

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| 35. J. J. Thomson postulated that atoms consist of a diffuse cloud of negative charge.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models | |

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| 36. Ernest Rutherford proposed the “plum pudding” model of the atom.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | False | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.4 - Early Atomic Experiments and Models | |

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| 37. The process at the center of scientific inquiry is called the \_\_\_\_\_\_\_\_\_\_.   |  |  | | --- | --- | | *ANSWER:* | scientific method | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 38. A \_\_\_\_\_\_\_\_\_\_ is a possible explanation for an observation.   |  |  | | --- | --- | | *ANSWER:* | hypothesis | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 39. A natural \_\_\_\_\_\_\_\_\_\_ summarizes what happens in a series of experiments, and a \_\_\_\_\_\_\_\_\_\_ is an attempt to explain why it happens.   |  |  | | --- | --- | | *ANSWER:* | law; theory | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.1 - Scientific Method | |

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| 40. The law of \_\_\_\_\_\_\_\_\_\_ states that mass is neither created nor destroyed in a chemical reaction.   |  |  | | --- | --- | | *ANSWER:* | conservation of mass | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 41. The law of \_\_\_\_\_\_\_\_\_\_ states that a given compound always contains exactly the same proportion of elements by mass.   |  |  | | --- | --- | | *ANSWER:* | definite proportions | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 42. \_\_\_\_\_\_\_\_\_\_ states that at the same temperature and pressure, equal volumes of different gases contain the same number of particles.   |  |  | | --- | --- | | *ANSWER:* | Avogadro’s hypothesis | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |

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| 43. The \_\_\_\_\_\_\_\_\_\_ in a chemical formula represent the number of atoms in a particular molecule or formula unit.   |  |  | | --- | --- | | *ANSWER:* | subscripts | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *LEARNING OBJECTIVES:* | AF.ZUMD.21.01.2 - Fundamental Laws | |