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Name:_____ Class:_____ Date:_____

Chapter 2

1. Who was the first person to have a part of his/her body X-rayed?
   a. Marie Curie
   b. Anna Röntgen
   c. Dmitri Mendeleev
   d. Bertha Wilhelm

ANSWER: b

2. Which is defined as the emission of energy?
   a. beta particles
   b. radiation
   c. electron smear
   d. X-rays

ANSWER: b

3. Which of the following can break down atoms?
   a. chemical reactions
   b. radiation
   c. nuclear means
   d. exposure to X-rays

ANSWER: c

4. _____ matter is attracted to or repelled by other matter.
   a. Heavy
   b. Microscopic
   c. Isotopic
   d. Charged

ANSWER: d

5. If the diameter of an atom is likened to the distance between San Francisco and Washington, D.C., the size of the nucleus of this atom would be equivalent to
   a. the state of Rhode Island.
   b. the city of Denver.
   c. a store in Kansas.
   d. a hair on the head of a person in Illinois.

ANSWER: c

6. A negatively charged particle located in the cloud like smear of negative charge of an atom is called a(n)
   a. proton.
   b. nucleus.
   c. electron.
   d. neutron.

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ANSWER: c

7. Which element is the only element to contain only one proton?
   a. helium
   b. carbon
   c. neon
   d. hydrogen

ANSWER: d

8. Which statement is false?
   a. The nucleus contains the protons and neutrons.
   b. The number of neutrons in an element is found by subtracting the number of protons from the atomic mass listed under each symbol on the periodic table.
   c. The number of electrons in a neutral atom will be equal to the number of protons.
   d. The neutron is located in the nucleus and takes up very little space inside the nucleus. Neutrons and protons have about the same mass.

ANSWER: b

9. Although the nucleus takes up a very small portion of the volume of an atom, each particle in the nucleus is about _____ times more massive than an electron.
   a. 10
   b. 100
   c. 2000
   d. 5 million

ANSWER: c

10. A neutral atom containing 8 protons will contain how many electrons?
   a. 2
   b. 4
   c. 8
   d. 16

ANSWER: c

11. An element is defined by the number of _____ it contains.
   a. electrons
   b. protons
   c. neutrons
   d. nuclei

ANSWER: b

12. The atomic number of an element is equal to the number of _____ that element contains.
   a. electrons

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b. protons
c. neutrons
d. isotopes

ANSWER: b

13. A neutral atom of sulfur will contain how many electrons?
a. 32
b. 6
c. 15
d. 16

ANSWER: d

14. How many electrons does a neutral atom of phosphorus contain?
a. 3
b. 30
c. 31
d. 15

ANSWER: d

15. At the time your textbook was written, there were _____ known different elements.
a. 58
b. 114
c. 2125
d. 6.02×10^{23}

ANSWER: b

16. Organize these elements from least number of protons to most: chromium, magnesium, arsenic, oxygen.
a. oxygen, magnesium, chromium, arsenic
b. magnesium, chromium, arsenic, oxygen
c. oxygen, arsenic, chromium, magnesium
d. arsenic, chromium, oxygen, magnesium

ANSWER: a

17. The element that has 76 protons in its nucleus is called
a. arsenic.
b. osmium.
c. thallium.
d. hafnium.

ANSWER: b

18. The scientist credited with bringing the metric system to Russia was

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a. Marie Curie.
b. Wilhelm Röntgen.
c. Anna Bertha.
d. Dmitri Mendeleev.

ANSWER: d

19. The name of the element whose atomic number is 22 is
a. titanium.
b. sodium.
c. neon.
d. tin.

ANSWER: a

20. What is the name of the element that contains 31 protons?
a. antimony
b. gallium
c. phosphorus
d. germanium

ANSWER: b

21. Write the name and symbol for the element with atomic number 51.
a. antimony, Sb
b. palladium, Pd
c. cerium, Ce
d. magnesium, Mg

ANSWER: a

22. All of the elements after atomic number_____ are artificial and do not exist in nature.
a. 57
b. 89
c. 92
d. 104

ANSWER: c

23. What is the atomic symbol for the element sodium?
a. S
b. So
c. Na
d. Dm

ANSWER: c

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24. Isotopes of an element differ in the number of _____ that they contain.
    a. electrons
    b. neutrons
    c. protons
    d. atoms

ANSWER: b

25. Identify the element that contains the following number of protons and neutrons: 36 protons and 48 neutrons.
    a. Kr
    b. Cd
    c. Po
    d. Mg

ANSWER: a

26. Identify the element that contains the following number of protons and neutrons: 29 protons and 35 neutrons.
    a. I
    b. Br
    c. Gd
    d. Cu

ANSWER: d

27. Identify the number of protons and neutrons in an atom of chromium.
    a. 24 protons, 28 neutrons
    b. 28 protons, 24 neutrons
    c. 52 neutrons, 24 protons
    d. 52 protons, 28 neutrons

ANSWER: a

28. Isotopes of which element were used to determine the source of the marble used in the Parthenon?
    a. oxygen
    b. carbon
    c. chlorine
    d. calcium

ANSWER: a

29. How many neutrons, protons and electrons are in an atom of Eu-153?
    a. 63 protons, 63 electrons, 90 neutrons
    b. 153 protons, 63 electrons, 63 neutrons
    c. 152 electrons, 153 electrons, 63 neutrons

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d. 90 electrons, 90 protons, 63 neutrons

ANSWER: a

30. In an atom, which particles are most likely to participate in chemical reactions?
    a. the protons
    b. the core electrons
    c. the valence electrons
    d. the neutrons

ANSWER: c

31. What are the maximum number of electrons that can exist in the second energy level?
    a. 2
    b. 8
    c. 10
    d. 18

ANSWER: b

32. What determines how far from the ground state an electron will jump when energy is added to an atom?
    a. the size of the atom
    b. the number of electrons in the atom
    c. the amount of energy added to the atom
    d. the number of atoms in a certain sample

ANSWER: c

33. Which of the following types of electromagnetic radiation is the most energetic?
    a. radio waves
    b. visible light
    c. ultraviolet light
    d. infrared light

ANSWER: c

34. An "EMR blocker" blocks
    a. electrons making rays.
    b. electromagnetic radiation.
    c. exceptional magnetic responses.
    d. extraneous machine relays.

ANSWER: b

35. Which type of visible light would have the shortest wavelength light?
    a. yellow
    b. blue

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c. red
d. green

ANSWER: b

36. The Energy Independence and Security Act of 2007 stated that
a. cars produced after 2007 must get at least 35 mpg.
b. incandescent bulbs that do not meet certain energy efficiency requirements must be phased out by 2014.
c. the U.S. must import less than 50% of its oil by the year 2020.
d. each state must produce at least 40% of its electricity from renewable sources by the year 2015.

ANSWER: b

37. Rank the following from shortest to longest wavelength: microwaves, yellow light, X-rays, gamma rays.
a. X-rays, gamma rays, yellow light, microwaves
b. microwaves, yellow light, X-rays, gamma rays
c. gamma rays, X-rays, yellow light, microwaves
d. yellow light, microwaves, gamma rays, X-rays

ANSWER: c

38. Choose the true statement.
a. When light is absorbed by an atom, electrons move from a higher energy to a lower energy level.
b. When light is emitted by an atom, electrons move from a higher energy to a lower energy level.
c. Sunlight produces light at distinct locations in a line spectrum.
d. The colors in a rainbow include all wavelengths of the electromagnetic spectrum.

ANSWER: b

39. Yellow light has a wavelength of about 655 nm. Electromagnetic radiation whose wavelength is 455 nm would most likely belong to
a. radio waves.
b. X-rays.
c. violet light.
d. infrared light.

ANSWER: c

40. Incandescent light bulbs
a. have not been produced since 2010.
b. will be phased out of production starting in 2020.
c. have been manufactured worldwide since just before the first World War.
d. will be used to replace less energy efficient LED type bulbs.

ANSWER: a

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41. Cell phones emit radiation that is of similar frequency to
    a. X-rays.
    b. microwaves.
    c. visible light.
    d. radio waves.

ANSWER: d

42. Which statement is true?
    a. High energy electromagnetic radiation has very long wavelengths.
    b. Electromagnetic radiation that has very short wavelengths is the least dangerous to humans.
    c. Cell phone radiation is considered ionizing radiation.
    d. A computer emits lower energy radiation than a cell phone.

ANSWER: d

43. Cell phones communicate with cell phone towers using
    a. microwave radiation.
    b. visible light.
    c. infrared light.
    d. radio waves.

ANSWER: d

44. Electrons can be promoted from a low energy level to a higher one
    a. by adding electricity to the atom.
    b. by exposing the atom to any type of light.
    c. by vigorously shaking a sample of atoms.
    d. by dissolving a sample of atoms in water.

ANSWER: a

45. When electrons in an atom are in their lowest possible energy state, they are said to be
    a. unionized.
    b. in the ground state.
    c. non-reactive.
    d. part of a line spectrum.

ANSWER: b

46. Street lamps that give off yellow light are most often filled with atoms of what element?
    a. mercury
    b. lithium
    c. sodium
    d. chlorine

ANSWER: c

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47. An atom of a particular element is energized and promoted to a higher energy level. The electron later relaxes back to its original state and emits electromagnetic radiation that has a wavelength of 1050 nm. You were observing this occurrence but did not detect any light being emitted. What is the most likely reason that you did not observe any light?

a. The process happened too fast.
b. The electrons are too small to see.
c. The wavelength that was emitted is outside the visible range of light.
d. The wavelength that was emitted caused the emission of radio waves, which you would have had to hear rather than see.

ANSWER: c

48. The term "light" refers to

a. visible light that humans can observe with the naked eye.
b. all types of electromagnetic radiation.
c. sunlight.
d. non-ionizing radiation.

ANSWER: b

49. Which type of electromagnetic radiation is associated with heat?

a. X-rays
b. gamma rays
c. visible light
d. infrared light

ANSWER: d

50. Electromagnetic radiation that is very energetic will

a. be of a low frequency.
b. have a long wavelength.
c. contain mostly non-ionizing radiation.
d. have a short wavelength.

ANSWER: d

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