Chap 02 13e Raven

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

1) Matter is composed of:

A) atoms
B) energy
C) mass
D) molecules

2) The number of protons in a given atom is equal to its:

A) atomic number
B) mass
C) neutron number
D) molecularnumber

3) Isotopes that are unstable and decay when their nucleus breaks up into elements with lower atomic numbers, and emit significant amounts of energy in the process, are called:

A) energetic
B) ionic
C) radioactive
D) isometric

4) Atoms containing a specific number of protons are called:

A) minerals
B) elements
C) metals
D) molecules

5) Sugar dissolves completely in water because of water's_____.

A) ionic bonds
B) cohesiveness
C) hydrophobicexclusion
D) polarity

6) The negative logarithm of the hydrogen ion concentration in a solution is referred to as:

A) pH
B) atomic mass
C) -OHconcentration
D) electronegativity
E) specific heat

7) Bicarbonate ions in the blood can absorb hydrogen ions, keeping the pH balanced. Bicarbonate acts as a_____in blood.

A) buffer
B) acid
C) base
D) alkaline

8) Atomic nuclei contain protons and_____.

A) isomers
B) ions
C) moles
D) neutrons

9) Carbon-12, Carbon-13 and Carbon-14 are examples of:

A) ions
B) isotopes
C) isomers
D) molecules

10) Organisms are composed of molecules, which are collections of smaller units, termed:

A) monomers.
B) atoms.
C) electrons.
D) polymers.
E) ions.

11) Negatively charged subatomic particles that have almost no mass are called:

A) electrons.
B) protons.
C) neutrons.
D) ions.
E) polymers.

12) Atoms of a single element that possess different numbers of neutrons are called:

A) polymers.
B) ions.
C) monomers.
D) isomers.
E) isotopes.

13) $Cl + e^- \rightarrow Cl^-$ is an example of a:

A) oxidation.
B) reduction.
C) polymerization.
D) ionization.

14) When atoms gain or lose electrons, they can become negatively or positively charged. These charged atoms are known as:

A) isotopes.
B) ions.
C) isomers.
D) unstableatoms.

15) When two atoms share a pair of electrons, this bonding is referred to as:

A) ionic.
B) covalent.
C) unstable.
D) hydrogen.

16) Water molecules are polar, with regions that exhibit partial positive or negative charges. These opposite charges allow water molecules to attract each other via:

A) ionic bonds.
B) covalent bonds.
C) hydrogen bonds.
D) peptide bonds.

17) An atom has 20 electrons and 20 neutrons. Assume it has a net charge of zero. What is the total mass of this atom?

A) 10
B) 20
C) 40
D) 80

18) Sanai was monitoring the oil spill in the Gulf of Mexico from an oil tanker. From her observations, she noted that the oil was moving in large patches through the water. The oil did not appear to dissolve into the water. Why did the oil not dissolve into the water?

A) Hydrophobicinteractions
B) Surface tension
C) Sea water acts as asolvent
D) Water formshydration shells
E) Water has a high heat ofvaporization

19) The atomic number of an element is equal to the number of:

A) protons only.
B) neutrons only.
C) protons plus electrons.
D) protons plus neutrons.
E) neutrons plus electrons.

20) Oxygen has an atomic mass of 16 and an atomic number of 8. How many neutrons are present?

A) 24
B) 8
C) 16
D) 4

21) <p>The pH of your small intestines is around 7.5 and the pH of your large intestine can be 5.5. As substances travel from the small intestines to the large intestine, what would happen to the H^+ ion concentration?

A) It decreases 100-fold.
B) It increases by 100-fold.
C) It increases 10-fold.
D) It increases 2-fold.
E) It decreases 10-fold.

22) Oxygen-16 is abundant in the environment and has 8 protons and 8 neutrons. Oxygen-18 has two extra neutrons. These two forms of oxygen are:

A) oxygen ions.
B) oxygenisotopes.
C) oxygen isomers.
D) oxygen dimers.

23) Which element's isotope is commonly used to determine when biological samples such as fossils were formed?

A) oxygen
B) hydrogen
C) carbon
D) nitrogen
E) sulfur

24) A type of atom where the number of electrons does not equal the number of protons is also referred to as:

A) valences.
B) ions.
C) isotopes.
D) isomers.

25) The area around a nucleus where an electron is most likely to be found is the:

A) electrical space.
B) energy level.
C) polar space.
D) orbital.

26) Regardless of its shape, a given orbital may contain no more than:

A) 1 electron.
B) 4 electrons.
C) 8 electrons.
D) 2 electrons.

27) All atoms tend to fill their outer energy levels with the maximum number of electrons, usually eight. Depending on whether atoms satisfy the octet rule, this will predict:

A) the chemicalbehavior of the atoms.
B) whether they willbe found in nature.
C) whether they will dissolve in water.
D) their radioactive energy.

28) Mendeleev found that when he arranged the known elements according to their atomic mass, the entries in the table exhibited a pattern of chemical properties that repeated itself in groups of eight elements. This led to the generalization now known as:

A) an atomic model.
B) valanceelectrons.
C) the periodictable.
D) the octetrule.

29) Sodium has 11 electrons arranged in three energy levels. In order to become stable, sodium forms an ion that contains:

A) no charge.
B) -1 charge.
C) -8 charge.
D) +1 charge.
E) +8 charge.

30) In the crystal matrix of ordinary salt, the sodium and chlorine are held together by:

A) peptide bonds.
B) covalent bonds.
C) ionic bonds.
D) hydrogen bonds.
E) nonpolar bonds.

31) Two oxygen atoms bind to each other by sharing two pairs of electrons. This molecule forms a(n):

A) single bond.
B) ionic bond.
C) hydrogen bond.
D) double covalentbond.

32) In a chemical analysis of a sample of animal tissue, which element would you expect to find in the least quantity?

A) carbon
B) hydrogen
C) nitrogen
D) oxygen
E) iodine

33) Life is thought to have evolved from complex molecules formed by the interaction of smaller molecules in the oceans and atmosphere. The substance which brought these molecules together to interact is:

A) hydrogen.
B) acids.
C) water.
D) buffers.
E) salts.

34) Because oxygen is more electronegative than hydrogen, the water molecule is:

A) hydrophobic.
B) hydrophilic.
C) nonpolar.
D) ionic.
E) polar.

35) Water molecules are attracted to each other due to the opposite charges created by partial charge separations within the molecules. These attractions are called:

A) peptide bonds.
B) covalent bonds.
C) ionic bonds.
D) hydrogen bonds.
E) double bonds.

36) How many hydrogen bonds can a water molecule form?

A) 1
B) 2
C) 3
D) 4
E) 5

37) Nitrogen has a higher electronegativity than hydrogen. As a result you would expect that ammonia (NH_3) molecules can form_____with each other.

A) hydrogen bonds
B) hydrophilicbonds
C) ionic bonds
D) covalent bonds
E) cohesive bonds

38) When water ionizes, it produces equal amounts of hydrogen and hydroxide ions that can reassociate with each other. The pH of water is:

A) 3
B) 4
C) 5
D) 6
E) 7

39) A scientist conducts a procedure that causes nitrogen atoms to gain neutrons. The resulting atoms will be: