3) An atom of argon rarely bonds to an atom of another element because an argon atom has
A) 2 electrons in the first shell
B) 22 neutrons
C) 3 electron shells
D) 8 valence electrons

2) A barium atom attains a stable electron configuration when it bonds with
A) two chlorine atoms
B) two sodium atoms
C) one sodium atom
D) one chlorine atom

3) When sodium and fluorine combine to produce the compound NaF, the ions formed have the same electron configuration as atoms of
A) argon, only
B) both argon and neon
C) neon, only
D) neither argon nor neon

4) Which statement describes what occurs as two atoms of bromine combine to become a molecule of bromine?
A) Energy is released as a bond is broken.
B) Energy is released as a bond is formed.
C) Energy is absorbed as a bond is formed.
D) Energy is absorbed as a bond is broken.

5) Given the balanced equation representing a reaction:

$$\text{Energy} + Cl_2(g) \rightarrow Cl(g) + Cl(g)$$

What occurs during this change?
A) Energy is released and a bond is formed.
B) Energy is absorbed and a bond is formed.
C) Energy is absorbed and a bond is broken.
D) Energy is released and a bond is broken.

6) Which term indicates how strongly an atom attracts the electrons in a chemical bond?
A) activation energy
B) alkalinity
C) atomic mass
D) electronegativity

7) Which element has an atom with the greatest attraction for electrons in a chemical bond?
A) N
B) P
C) Bi
D) As

8) Atoms of which element have the greatest tendency to gain electrons?
A) bromine
B) chlorine
C) iodine
D) fluorine

9) Which substance contains bonds that involved the transfer of electrons from one atom to another?
A) NH_3
B) KBr
C) Cl_2
D) CO_2

10) The bonds in BaO are *best* described as
A) covalent, because valence electrons are transferred
B) ionic, because valence electrons are transferred
C) ionic, because valence electrons are shared
D) covalent, because valence electrons are shared

11) The compound *ACl* is classified as ionic if *A* represents the element
A) I
B) H
C) Br
D) Rb

12) Which of the following Lewis electron-dot diagrams represents calcium oxide?
A) $Ca^{2+}\left[\cdot\!\underset{\cdot\cdot}{\overset{\cdot\cdot}{O}}\!\cdot\right]^{2-}$
B) $\left[Ca\right]^{2+}\ O^{2-}$
C) $Ca::O:$
D) $Ca::O:$

13) Which two substances are covalent compounds?
A) KI(s) and NaCl(s)
B) $C_6H_{12}O_6$(s) and HCl(g)
C) NaCl(s) and HCl(g)
D) $C_6H_{12}O_6$(s) and KI(s)

14) As a bond between a hydrogen atom and a sulfur atom is formed, electrons are
A) shared to form a covalent bond
B) transferred to form an ionic bond
C) transferred to form a covalent bond
D) shared to form an ionic bond

15) Which of the following formulas represents a molecular compound?
A) Kr
B) N_2O_4
C) NaI
D) LiOH

16) An oxygen molecule contains a double bond because the two atoms of oxygen share a total of
A) 1 electron
B) 3 electrons
C) 2 electrons
D) 4 electrons

17) Given a formula for oxygen: O=O

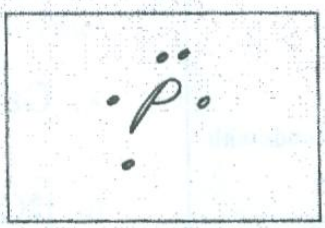
What is the total number of electrons shared between the atoms represented in this formula?
A) 1
B) 2
C) 8
D) 4

18) Which of the following elements is composed of molecules that each contain a multiple covalent bond?
A) chlorine
B) fluorine
C) nitrogen
D) hydrogen

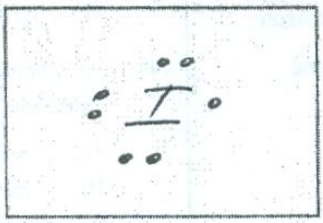
19) The degree of polarity of a chemical bond in a molecule of a compound can be predicted by determining the difference in the
A) atomic masses of the bonded atoms in a molecule of the compound
B) electronegativities of the bonded atoms in a molecule of the compound
C) melting points of the elements in the compound
D) densities of the elements in the compound

20) The chemical bond between which two atoms is most polar?
A) C-N
B) S-Cl
C) H-H
D) Si-O

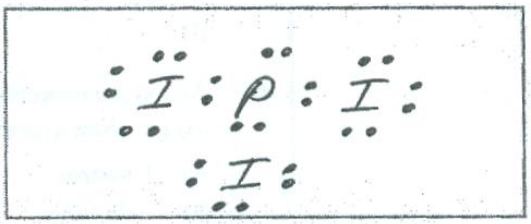
12) In the box below, draw the electron-dot (Lewis) structure of an atom of **phosphorus.**



13) In the box below, draw the electron-dot (Lewis) structure of an atom of **iodine.**



14) In the box below, draw the electron-dot (Lewis) structure of **phosphorus tri-iodide (a covalent compound).**



15) In the box below, draw the electron-dot (Lewis) structure of **carbon disulfide (a covalent compound).**