

Name: _____

Date: _____

- 1 A lithium atom transfers an electron to a fluorine atom. Which describes fluorine in this example?
 - A noble gas
 - B compound
 - C positive ion
 - D negative ion

- 2 Which is true about valence?
 - A Valence only applies to metals.
 - B Valence only applies to noble gases.
 - C Valence is the same for all members of a group of elements.
 - D Valence is different for all members of a group of elements.

- 3 What makes metals good conductors of heat?
 - A The electrons have no charge.
 - B The electrons form a cubic shape.
 - C The electrons are free to move around.
 - D The electrons are transferred readily to other atoms.

- 4 What type of bond links a polymer?
 - A solid
 - B ionic
 - C covalent
 - D monomer

- 5 Which represents a molecule consisting of two hydrogen atoms joined in a covalent bond?
 - A H₂
 - B HO₂
 - C H₂O
 - D HYD₂

- 6 How many atoms are in a molecule of carbon monoxide (CO)?
 - A one
 - B two
 - C three
 - D fourteen

- 7 Atoms are held together in _____ bonds.
 - A chemical
 - B covalent
 - C ionic
 - D metallic

- 8 An ionic bond is the electrical attraction between _____ and _____ charged ions in an ionic compound.
- A chemically, non chemically
 - B positively, neutrally
 - C positively, negatively
 - D neutrally, negatively
- 9 A _____ contains ions of two elements.
- A compound
 - B binary ionic compound
 - C ionic compound
 - D binary covalent compound
- 10 A _____ is a chemical bond that forms when atoms share unpaired valence electrons.
- A covalent bond
 - B ionic bond
 - C metallic bond
 - D molecular bond
- 11 Covalent bonds can be _____, _____, or _____, depending on the number of pairs of electrons that are shared.
- A single, double, triple
 - B one, two, three
 - C ionic, covalent, or metallic
 - D yabba, dabba, doo
- 12 Elements close together on the periodic table are more likely to _____ electrons than _____ electrons.
- A transfer, share
 - B share, transfer
 - C pool, transfer
 - D eat, drink
- 13 What does Part II of the diagram represent?
- A It represents sodium losing an electron from its outer energy level and chlorine gaining an electron in its outer energy level.
 - B It represents sodium gaining an electron in its outer energy level and chlorine losing an electron from its outer energy level
- 14 What do the negative and positive signs represent in Part III?
- A They represent the charge of the Na ion and Cl ion.
 - B They represent the ionic bond connecting the Na ion to the Cl ion.

- 15 What has been formed in Part III?
- A A compound of a positive sodium and a negative chloride ion held together by an covalent bond has been formed.
 - B A compound of a positive sodium and a negative chloride ion held together by an ionic bond has been formed.
- 16 Imagine you discovered a new ionic compound. Indicate the properties the new substance must have in order to be an ionic compound.
- A The compound will be a solid, liquid, or gas at room temperature. It will be very strong. The compound will have relatively high melting and boiling points. It will not dissolve in water. It will be conductive of heat and electricity. It will be malleable and ductile.
 - B The compound will be solid at room temperature. It will be brittle. The compound will have relatively high melting and boiling points. It will dissolve in water.
- 17 Speculate as to why metals are good conductors.
- A Metals are good conductors of electricity and thermal energy because the electrons are free to move.
 - B Metals are good conductors of electricity and thermal energy because they form ionic bonds.
- 18 Magnesium has 12 electrons. The nearest noble gas to magnesium is neon, with ten electrons in its outer energy level. Construct a diagram to illustrate the change magnesium must make to have a stable structure similar to that of neon. Explain the diagram.
- A $\text{Mg} \rightarrow \text{Mg}^{+2}$: Magnesium must lose two electrons to form the magnesium ion.
 - B $\text{Mg} \rightarrow \text{Mg}^{+2}$: Magnesium must gain one electron to form the magnesium ion.
- 19 Copper is used to make jewelry, wires, and pans. Speculate about what type of element copper might be, and explain why.
- A Copper is a semimetal, or metalloid. Its use as wire shows that it is not ductile and that it does not conduct electricity. Its use in pans shows that it is not malleable and has poor thermal conductivity. It must also have a low melting point. To be used as a pan, it also must be brittle.
 - B Copper is a metal. Its use as wire shows that it is ductile and that it conducts electricity. Its use in pans shows that it is malleable and has good thermal conductivity. It must also have a high melting point. To be used as a pan, it also must be tough and strong.

- 20 Lithium has a valence of one electron. Sodium is in the same group as lithium. Construct a dot diagram for sodium.
- A Na·
 - B Na:
- 21 Malcolm compares a compound to a necklace in which the individual elements are strung together. Critique Malcolm's example.
- A Malcolm's example is not a good comparison. Compounds have different properties from the elements that compose them. In Malcolm's example, the beads are unchanged when they are linked.
 - B Malcolm's example is a good comparison. Compounds have the same properties as the elements that compose them. In Malcolm's example, the beads are unchanged when they are linked.