

Name _____ Review for Chemical Bonding Test (2/20 & 2/21)

1. What rule states that all elements want to be like the nearest noble gas?
_____ This means they want _____ electrons in their outer shells.
2. The name given to electrons in their highest occupied energy shell :

3. How do you find the number of valence electrons an element has when it is in a neutral state? _____
How many valence electrons does Calcium have? _____ Iodine? _____
4. What charge does the Francium ion have? _____ Bromide? _____
Radium? _____
5. What is an ionic compound? Ionic compounds usually involve a **M** _____ & a **N** _____
6. Metals tend to **lose** / **gain** electrons. (circle the correct bold word)
7. Anions are ions with a **positive** / **negative** charge. (circle the correct bold word)
8. Cations are ions with a **positive** / **negative** charge. (circle the correct bold word)
9. What is the difference between an ionic bond and a covalent bond? What role does electronegativity play in bonding?

Use Lewis Dots diagrams to show the ionic bonds in these compounds.

10. MgS

11. Ca_3P_2

12. Na_4Si

13. What are the general trends in electronegativity as atomic number increases?

Use your NOTES to help you answer these questions!

14. Why do elements bond?

15. Bonding that involves the sharing of electrons is known as _____ bonding.

16. Bonding that involves the exchange or gain and loss of electrons is known as _____ bonding.

17. A (single, double, or triple) covalent bond involves sharing of 2 electrons.

18. A (single, double, or triple) covalent bond involves sharing of 6 electrons.

19. Covalent bonds in which the atoms share electrons equally are called: _____

20. Covalent bonds in which the atoms do not share electrons equally are called: _____

21. Which type of bond, polar or nonpolar covalent, results in partial charges on atoms? _____

22. How many valence electrons do most elements need to become stable?

23. Which group does not form compounds? Why?

24. A covalent bond occurs between which of the following: two metals, two nonmetals, a metal and a nonmetal?

25. How can you tell how many bonds an element can make?

26. Rank the following attractive forces from weakest to strongest: Ionic bonding, Hydrogen bonding, Dipole-dipole attractions, Covalent bonding, Dispersion forces

27. Which intermolecular forces are most likely involved in polar covalent compounds?

28. Which intermolecular force is most likely involved in non-polar covalent compounds?

29. For each of the following molecules: (use a separate sheet of paper if necessary and keep the diagrams neat)

- i. Draw the correct structural formula
- ii. Indicate the molecular shape.
- iii. Indicate the molecular polarity
- iv. Draw dipoles and partial charges if the molecule is polar.
- v. Indicate the intermolecular force involved.

- a. CH_4
- b. SbF_3
- c. O_2
- d. CO_2
- e. CH_2O
- f. OF_2