

REVIEW—Bonding (use your unit 5 notes)

1. How can you distinguish an ionic compound from a covalent compound in terms of types of elements.

1 Metal / 1 non-metal 2 non-metals

2. What happens to electrons when atoms form a covalent bond?

e^- shared

3. What happens to electrons when atoms form an ionic bond?

e^- transferred from metal to non-metal

4. Name the following: (if transition metal be sure to include a roman numeral)

a. K_2O

potassium oxide

b. $TiCl_3$

Titanium (III) chloride

c. $Mn(CO_3)_2$

manganese (IV) carbonate

d. OF_2

Oxygen difluoride

e. P_3O_6

triphosphorous hexoxide

5. Write a formula for the following:

a. carbon tetrachloride

CCl_4

b. iron (III) oxide

Fe_2O_3

c. nickel (III) sulfate

Ni_2S_3

d. magnesium chloride

$MgCl_2$

6. Under what circumstances do ionic compounds conduct electricity? Covalent compounds?

↳ when aqueous or liquid

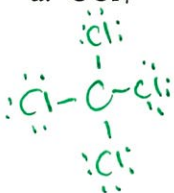
↳ never

7. When a compound is formed from 2 elements is energy released or absorbed?

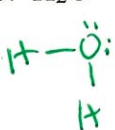
released

8. Draw a dot diagram for the following substances (covalent compounds) or ions:

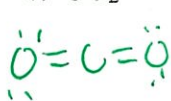
a. CCl_4



b. H_2O



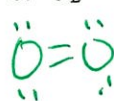
c. CO_2



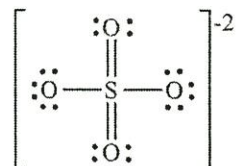
d. $NaCl$



e. O_2



f. SO_4^{2-} (already done)



9. Which of the above MOLECULES are polar? And why?

B because it's asymmetrical

10. Which of the above compounds are covalent?

A, B, C, E, F (all 2 non-metals)

11. Is a hydrogen-sulfur bond polar? What tells you this?

Yes - there is a difference in electronegativity (EN)

12. Use electronegativities to determine whether $AlCl_3$ is ionic or covalent.

metal / non-metal

13. Would a polar substance have a higher or lower boiling point compared to non-polar? Why?

higher bcs with partial charges the IMF are stronger (dipole-dipole) & attractions greater than non-polar (van der Waals weaker forces)

14. Is water a polar molecule? Explain.

Yes - asymmetrical

15. What is an intermolecular force? Name an intermolecular force. Why are intermolecular forces important?

attractive force

Hydrogen bonding
Dipole-dipole
Van der Waals

↳ determine what state of matter & what it is

16. What is hydrogen bonding (is it a bond? If not, what is it?) and which of the following would have it?

NOT bond intermolecular force (H bonded to NOA)

a. H_2O

b. CH_3OH

c. CH_4

d. NH_3

e. HF

17. What properties are influenced by the type of bonding in a substance?

most physical properties (state of matter), melting & boiling point.

18. Explain why metals, aqueous ionic substances and liquefied ionic substances conduct electricity, while covalent compounds don't.

There are mobile ions in ionic (l) or (aq), but covalent compounds

19. In a formula, what does a subscript tell you?

How many of the element there are of the element ^{don't,} Before the #

20. What is the difference between a cation and an anion?

+ (metal lost e^-) \leftarrow \ominus (non-metal gained)

21. What does the symbol (aq) mean? (State the word it stands for and that word's meaning.)

aqueous means dissolved in water

22. What is a diatomic element and which elements are diatomic?

when done there are 2 of the element 7th club ($H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2$)

23. What is meant by "binary compound"? Give an example.

2 elements in the compound $NaCl, CaCl_2$

24. If a compound is binary, how will its name end?

"ide"

25. If a compound contains a polyatomic ion, what are the possible endings for its name?

ate
ite
ide
ium

26. An aqueous solution is made, and it is bright orange. What does that tell you about the substance dissolved (aka where might it be found on the periodic table?)

it will be a transition metal (groups 3-12)

27. What types of elements are in metallic bonding? Why do metals conduct electricity?

metals (just 1 like Cu or Ag) \rightarrow there is a sea of mobile electrons

28. State the properties of ionic compounds:

Melting point/boiling point: High

Conductivity: only when aq or (l)
not solid

Hardness: very

Malleability: ~~yes~~ No-shatter

29. State the properties of covalent compounds:

Melting point/boiling point: low

Conductivity: NO

Hardness: soft

Malleability: NO (shatter)