

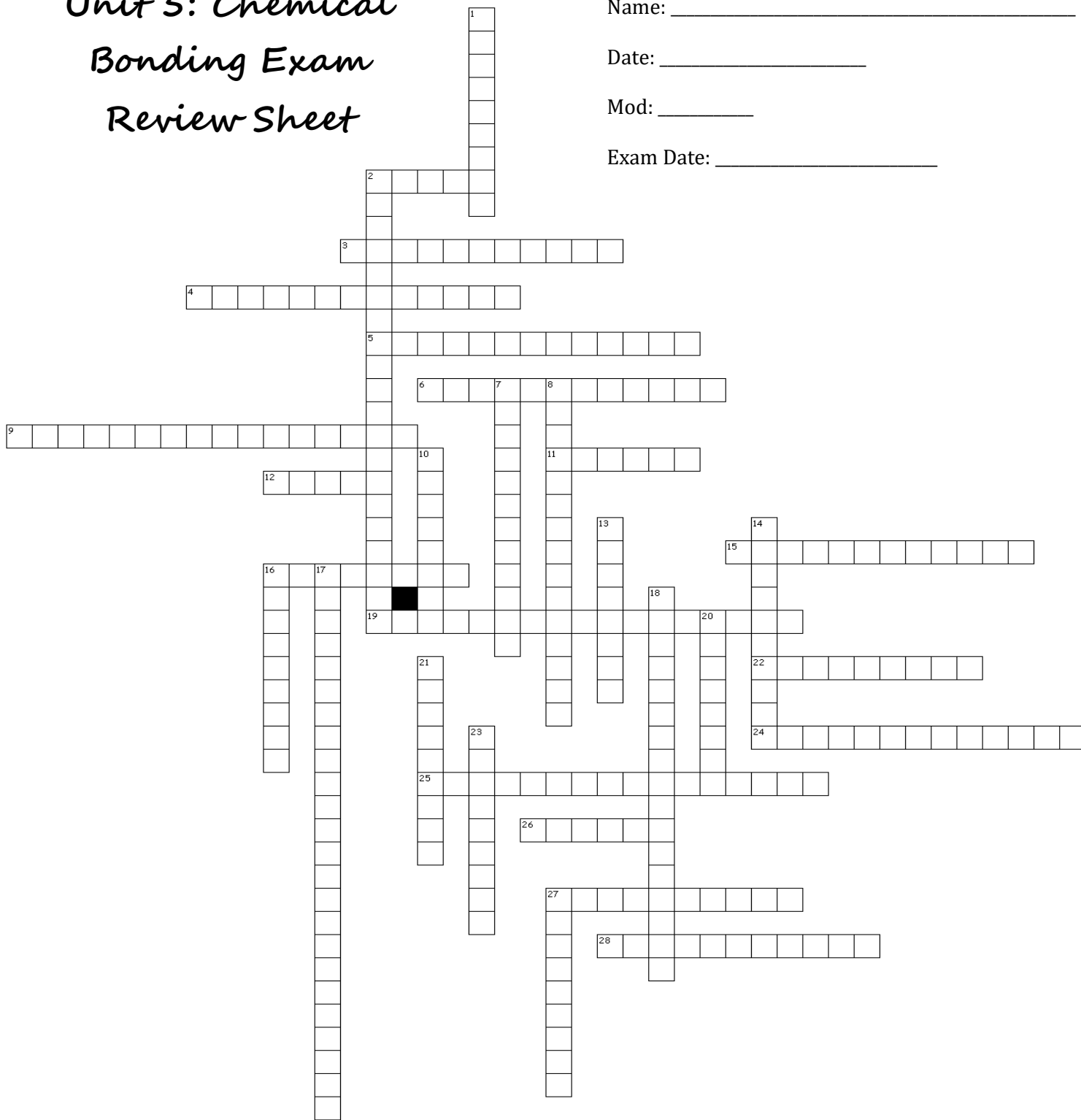
Unit 5: Chemical Bonding Exam Review Sheet

Name: _____

Date: _____

Mod: _____

Exam Date: _____



A. Complete the following table.

Property	Ionic Compounds	Polar Covalent Compounds	Nonpolar Covalent Compounds
State of matter			
Ability to dissolve in H ₂ O			
Ability to conduct electricity			
Melting/Boiling points			
Ability to dissolve in alcohols			

Across

2. a chemical bond that results from the electrical attraction between large numbers of cations and anions; forms by the transfer of valence electrons from a metal to a nonmetal
3. electrons in metallic bonds are ____ meaning they do not belong to any one atom but can move freely throughout the orbitals
4. two or more atoms with a charge
5. amount of energy released to form ionic bonds and crystal structure
6. mutual electrical attraction between the nuclei and valence electrons of different atoms that binds the atoms together; results in a chemical compound
9. two atoms of the same nonmetal element with a nonpolar covalent bond
11. have low electronegativity values
12. a covalent bond in which the bonded atoms have an **unequal** attraction for the shared valence electrons in overlapping orbitals between nonmetals; creates charged ends on molecules
15. one atom with a charge
16. a neutral group of atoms that are held together by covalent bonds; smallest particle of a covalent compound
19. shows chemical bonds for covalent (polar & nonpolar) compounds using chemical symbols and dashes for shared electrons
22. have high electronegativity values
24. mixing of two or more orbitals of similar energy from different sublevels to form new orbital with lower energy
25. 3D arrangement of repeating ions in an ionic compound
26. created by equal and opposite charge separated by a short distance
27. the energy required to break a chemical bond and form neutral isolated atoms

28. the simplest collection of atoms from which an ionic compound's formula can be established; smallest particle of an ionic compound.

Down

1. more than one possible structure can be drawn to represent the covalent compound; actual structure is a blend of the two, so that it reduces bond length
2. attraction (energy force) between molecules (covalent compounds)
7. the ability of a substance to be hammered into thin sheets
8. shorthand for chemical compounds using chemical symbols for elements and subscripts for number of atoms
10. a covalent bond in which the bonded atoms have an **equal** attraction for the shared valence electrons in overlapping orbitals between nonmetals
13. type of chemical bond that results from the sharing of electron pairs between two nonmetal atoms
14. the average distance between atoms in a covalent bond
16. nature favors arrangements with _____ potential energy
17. show chemical bonds between atoms using chemical symbols for atoms (nucleus and inner-electrons) and dots for valence electrons
18. 3D arrangement of atoms in covalent compounds
20. the chemical bonding that results from the attraction between metal atoms and the surrounding "sea of electrons"; these types of bonds **do not** form chemical compounds
21. the ability of a substance to be drawn out to form a wire
23. an atom has four pairs of electrons (8e-) in its valence shell; results in lower energy and higher stability for an atom with a "filled" valence shell
27. the average number of degrees between two bonds from the same central atom

C. Answer the following **on loose-leaf** in order to receive credit.

- What is VSEPR theory? What does VSEPR stand for? What type of compounds does it focus on (ionic or covalent)?
- What determines the molecular polarity of the compound? (**Hint:** Think in terms of symmetry & lone pairs)

D. Draw the Lewis electron dot diagrams for each of the following **on loose-leaf** in order to receive credit.
(**HINT: CHECK IF IT IS IONIC OR COVALENT FIRST!**)

- MgCl_2 , Ca_3N_2 , diatomic oxygen (O_2), HBr , CH_3F , C_2I_2 , NO_3^{1-} , NH_4^{1+}

E. Define the following **on loose-leaf** in order to receive credit.

- London dispersion forces; Dipole-dipole; Hydrogen bonding

F. Complete the following table representing the three types of chemical bonds that form compounds.

Bond Type	Elements in Bond (Types of Atoms)	How it forms (What does it do with the e-?)	EN Difference (Range)	Structure (Lattice or VSEPR?)
Ionic				
Polar Covalent				
Nonpolar Covalent				

