

___1. If the electronegativity difference between the elements in compound NaX is 2.1, what is element X?

- (1) bromine (3) fluorine
 (2) chlorine (4) oxygen

___2. Which bond has the greatest degree of ionic character?

- (1) H-Cl (3) Cl-Cl
 (2) I-Cl (4) K-Cl

___3. Which symbol represents a particle that has the same total number of electrons as S²⁻?

- (1) O²⁻ (3) Se²⁻
 (2) Si (4) Ar

___4. Which element has atoms with the greatest attraction for electrons in a chemical bond?

- (1) beryllium (3) lithium
 (2) fluorine (4) oxygen

___5. Which atom will form the most polar bond with the greatest degree of ionic bonding when bonding with sodium?

- (1) F (3) I
 (2) Cl (4) Br

___6. Which compound contains both ionic and covalent bonds?

- (1) ammonia (3) sodium nitrate
 (2) methane (4) potassium chloride

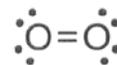
___7. As 1 gram of sodium hydroxide dissolves in 100 grams of water, the conductivity of the solution

- (1) decreases (3) remains the same
 (2) increases

___8. When sodium and fluorine combine to produce the compound NaF, the ions formed have the same electron configuration as atoms of

- (1) argon, only
 (2) neon, only
 (3) both argon and neon
 (4) neither argon nor neon

___9. Given a formula for oxygen:



What is the total number of electrons shared between the atoms represented in this formula?

- (1) 1 (3) 8
 (2) 2 (4) 4

___10. Which pair of atoms will share electrons when a bond is formed between them?

- (1) Ba and I (3) K and Cl
 (2) Br and Cl (4) Li and I

___11. Covalent bonds are formed when electrons are

- (1) transferred from one atom to another
 (2) captured by the nucleus
 (3) mobile within a metal
 (4) shared between two atoms

___12. A solid substance is an excellent conductor of electricity. The chemical bonds in this substance are most likely

- (1) ionic, because the valence electrons are shared between atoms
 (2) ionic, because the valence electrons are mobile
 (3) metallic, because the valence electrons are stationary
 (4) metallic, because the valence electrons are mobile

Bonding Web Practice

13. The ability to conduct electricity in the solid state is a characteristic of metallic bonding. This characteristic is best explained by the presence of

- (1) high ionization energies
- (2) high electronegativities
- (3) mobile electrons
- (4) mobile protons

14. Which substance will conduct electricity in both the solid phase and the liquid phase?

- (1) AgCl
- (2) Ag
- (3) H₂
- (4) HCl

15. A certain substance is a poor conductor of electricity and has a high melting point. This substance is most likely

- (1) CO₂
- (2) SiO₂
- (3) Cl₂
- (4) C₆H₁₂O₆

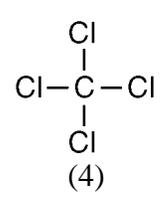
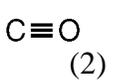
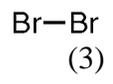
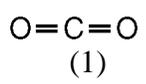
16. Which is a property of network solids but *not* molecular solids?

- (1) electrical insulators
- (2) water soluble
- (3) high melting points
- (4) high malleability

17. Which compound is a network solid at STP?

- (1) CO₂
- (2) H₂O
- (3) SiC
- (4) NaH

18. Which molecule contains a nonpolar covalent bond?



19. Which type of bond exists between an atom of carbon and an atom of fluorine?

- (1) ionic
- (2) metallic
- (3) polar covalent
- (4) nonpolar covalent

20. The degree of polarity of a chemical bond in a molecule of a compound can be predicted by determining the difference in the

- (1) melting points of the elements in the compound
- (2) densities of the elements in the compound
- (3) electronegativities of the bonded atoms in a molecule of the compound
- (4) atomic masses of the bonded atoms in a molecule of the compound

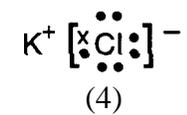
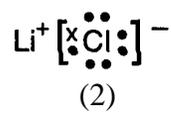
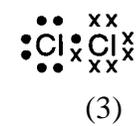
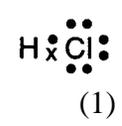
21. Which combination of atoms can form a polar covalent bond?

- (1) H and H
- (2) H and Br
- (3) N and N
- (4) Na and Br

22. What type of bond exists in a molecule of hydrogen iodide?

- (1) a polar covalent bond with an electronegativity difference of zero
- (2) polar covalent bond with an electronegativity difference between zero and 1.7
- (3) a nonpolar covalent bond with an electronegativity difference of zero
- (4) a nonpolar covalent bond with an electronegativity difference between zero and 1.7

23. Which electron-dot diagram represents a molecule that has a polar covalent bond?



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24. The bonds between hydrogen and oxygen in a water molecule are classified as

- (1) polar covalent (3) ionic
(2) nonpolar covalent (4) metallic

25. When phosphorus and chlorine atoms combine to form a molecule of PCl_3 , 6 electrons will form

- (1) nonpolar covalent bonds
(2) polar covalent bonds
(3) ionic bonds
(4) hydrogen bonds

26. What type of bond exists in a molecule of iodine?

- (1) ionic (3) nonpolar covalent
(2) polar covalent (4) metallic

27. The chemical bond between which two atoms is most polar?

- (1) C–N (3) S–Cl
(2) H–H (4) Si–O

28. Which molecule has an asymmetrical shape?

- (1) N_2 (3) Cl_2
(2) NH_3 (4) CCl_4

29. Which molecule is polar and contains polar bonds?

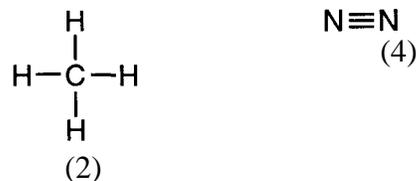
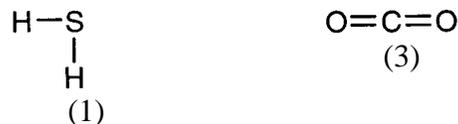
- (1) CCl_4
(2) CO_2

(3) N_2
(4) NH_3

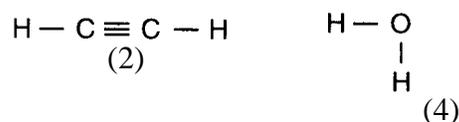
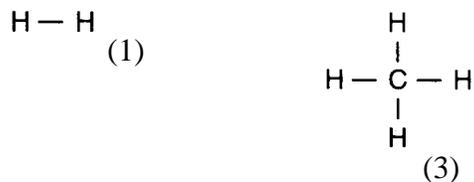
30. Which statement explains why low temperature and high pressure are required to liquefy chlorine gas?

- (1) Chlorine molecules have weak covalent bonds.
(2) Chlorine molecules have strong covalent bonds.
(3) Chlorine molecules have weak intermolecular forces of attraction.
(4) Chlorine molecules have strong intermolecular forces of attraction.

31. Which molecule is polar?



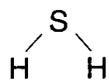
32. Which structural formula represents a polar molecule?



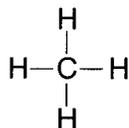
33. Which formula represents a polar molecule containing polar covalent bonds?

- (1) H_2O (3) NaCl
(2) CO_2 (4) Cl_2

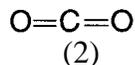
____34. Which structural formula represents a polar molecule?



(1)



(3)

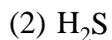


(2)



(4)

____35. Which of these substances has the strongest intermolecular forces?



____36. Hexane (C_6H_{14}) and water do *not* form a solution. Which statement explains this phenomenon?

(1) Hexane is polar and water is nonpolar.

(2) Hexane is ionic and water is polar.

(3) Hexane is nonpolar and water is polar.

(4) Hexane is nonpolar and water is ionic.

____37. Which molecule is nonpolar?



____38. Which formulas represent two polar molecules?

