

# CHEMICAL BONDS

TEST \_\_\_\_\_

## Intermolecular Forces 1

Date: \_\_\_\_\_

- In which of the elements with the given atomic numbers is the force holding the atoms together metallic bond?  
A) 16    B) 17    C) 18    D) 15    E) 20
- Which one of the compounds below is a network crystal?  
A)  $\text{NH}_3$     B)  $\text{PCl}_5$     C)  $\text{SiC}$     D)  $\text{H}_2\text{O}$     E)  $\text{MgCl}_2$
- Which one of the following attractive forces is the strongest?  
A) Ionic bond  
B) Hydrogen bond  
C) Covalent bond  
D) Van der Waals forces  
E) Dipole-dipole forces
- With which one of the elements with the atomic numbers given below does the element having the electron configuration of  $1s^2 2s^2 2p^5$  form an ionic solid?  
A) 6    B) 7    C) 9    D) 12    E) 16
- Which one of the elements with the atomic numbers given below forms a network solid?  
A) 5    B) 6    C) 8    D) 15    E) 17
- Which one of the following substance conducts electricity when it is liquefied, though it does not when it is solid?  
A)  $\text{NaCl}$     B)  $\text{CH}_4$     C)  $\text{NH}_3$     D)  $\text{SiC}$     E)  $\text{CO}$
- Atomic numbers of the elements A, B, C, and D are 6, 9, 10, 11 respectively. Which atoms combine to form ionic bond?  
A) A – B    B) A – C    C) B – D    D) B – C    E) C – D
- In which of those below is the force holding the molecules together only Van der Waals forces?  
A)  $\text{C}_2\text{H}_6$     B)  $\text{C}_2\text{H}_5\text{OH}$     C)  $\text{HF}$     D)  $\text{NH}_3$     E)  $\text{NaCl}$
- Which one of the following substance has the highest boiling point?  
A)  $\text{C}_2\text{H}_5\text{OH}$     B)  $\text{CH}_3 - \text{O} - \text{CH}_3$     C)  $\text{CH}_3\text{OH}$   
D)  $\text{CH}_4$     E)  $\text{CH}_3 - \text{CH}_2 - \text{CH}_3$
- Which one of the following substance has the lowest melting point?  
A)  $\text{LiCl}$     B)  $\text{CCl}_4$     C)  $\text{K}_2\text{O}$     D)  $\text{SiO}_2$     E)  $\text{HCl}$
- Which one(s) below conducts electricity?  
I- Liquid  $\text{NaCl}$   
II- Solid  $\text{KCl}$   
III- Diamond  
IV- Solid  $\text{Fe}$   
A) I – II    B) Only IV    C) I – III    D) I – IV    E) II – IV
- In which of the following is the force holding the molecules together not only van der Waals forces?  
A)  $\text{C}_2\text{H}_6$     B)  $\text{CH}_4$     C)  $\text{SiF}_4$     D)  $\text{H}_2\text{S}$     E)  $\text{Br}_2$
- Which one of the following substances has dipole-dipole forces between its molecules in its solid form?  
A)  $\text{Xe}$     B)  $\text{LiF}$     C)  $\text{HCl}$     D)  $\text{F}_2$     E)  $\text{CH}_4$
- Which one of the following substances has only van der Waals forces between its molecules in the solid state?  
A)  $\text{ClBr}$     B)  $\text{CCl}_4$     C)  $\text{SiO}$     D)  $\text{NaCl}$     E)  $\text{HF}$
- $\text{NaCl}$ ,  $\text{Br}_2$ ,  $\text{Na}$ ,  $\text{H}_2$ ,  $\text{Li}$  (in the solid form). Which one of the following would you expect to be correct order increasing melting point?  
A)  $\text{Br}_2 > \text{Na} > \text{NaCl} > \text{Li} > \text{H}_2$   
B)  $\text{NaCl} > \text{Na} = \text{Li} > \text{Br}_2 > \text{H}_2$   
C)  $\text{NaCl} > \text{Li} > \text{Na} > \text{Br}_2 > \text{H}_2$   
D)  $\text{NaCl} > \text{Na} > \text{Li} > \text{Br}_2 > \text{H}_2$   
E)  $\text{NaCl} > \text{Br}_2 > \text{H}_2 > \text{Na} > \text{Li}$
- Which one of the following liquids has the highest melting point?  
A)  $\text{HF}$     B)  $\text{HCl}$     C)  $\text{H}_2\text{S}$     D)  $\text{CCl}_4$     E)  $\text{HBr}$
- Which one of the following substances is liquid at room temperature?  
A)  $\text{C}_3\text{H}_8$     B)  $\text{CH}_3\text{OH}$     C)  $\text{O}_2$     D)  $\text{N}_2$     E)  $\text{CO}$
- Which one of the following elements forms an ionic compound with  ${}_{17}\text{Cl}$ ?  
A)  ${}_6\text{A}$     B)  ${}_8\text{B}$     C)  ${}_{10}\text{C}$     D)  ${}_{11}\text{D}$     E)  ${}_{14}\text{E}$
- Which one of the following statements is wrong for the element  ${}_{17}\text{X}$ ?  
A) it forms an ionic compound with  ${}_{11}\text{Na}$   
B) the molecules between  ${}_{17}\text{X}$  and  ${}_{1}\text{H}$  have dipole-dipole forces  
C) the  $\text{X}_2$  molecules have only van der Waals forces in the solid state  
D) the intermolecular bond in  $\text{X}_2$  (with in molecules in  $\text{X}_2$ ) are covalent  
E) the  $\text{X}_2$  molecules are nonpolar.
- I.  $\text{HF}$     II.  $\text{H}_2\text{S}$     III.  $\text{NH}_3$     IV.  $\text{CF}_4$   
Which substance or substances have hydrogen bonds between their molecules in the liquid state?  
A) I    B) I – II    C) II – III    D) III – IV    E) I – III
- Which one of the following elements forms a network solid involving covalent bonded atoms?  
A)  ${}_{11}\text{A}$     B)  ${}_{13}\text{B}$     C)  ${}_{14}\text{C}$     D)  ${}_{16}\text{D}$     E)  ${}_{17}\text{E}$
- Which one of the following molecular substances has the highest solubility in  $\text{H}_2\text{O}$ ?  
A)  $\text{PH}_3$     B)  $\text{HBr}$     C)  $\text{CO}_2$     D)  $\text{NH}_3$     E)  $\text{N}_2$