

General Chemistry Multiple Choice Questions Chapter 5

1 Which of the following possesses a polar covalent bond?

- a NaCl (s) b O₂ (g)
c Al (s) d SO₂ (g)

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2 Which is the most electronegative atom?

- a Cl b Se
c Al d Ca

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3 Which of the following molecules has a dipole moment?

- a CO₂ b PF₃
c NH₄⁻ d SiH₄

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4 Which statement is not true?

- a Electronegativity tends to decrease down a representative family
b Metal fluorides and metal oxide compounds tend to be ionic
c Nitrogen can form a maximum of four bonds whereas phosphorus can form a maximum of six bonds
d Bonding between atoms becomes more effective with increasing atomic size.

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5 Which of the following molecules contains polar covalent bonds but is a nonpolar molecule?

- a CH₃Cl b CH₂Cl₂
c NH₃ d CCl₄
e N₂

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General Chemistry Multiple Choice Questions Chapter 5

1 How many nonbonding valence electrons are possessed by the Br atom in BrF_3 ?

- a 2 b 3
c 4 d 6

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2 How many nonbonding valence electrons are possessed by the Cl atoms in CCl_4 ?

- a 6 b 12
c 18 d 24

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3 How many nonbonding valence electrons exist in one molecule of methane, CH_4 ?

- a 0 b 1
c 2 d 4

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General Chemistry Multiple Choice Questions Chapter 5

1 Which of the following compounds is a covalent molecule?

a SO_2

b CaCl_2

c Al_2O_3

d Na_2S

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2 Determine whether the following compound is ionic, covalent, or metallic:

Brass

a Ionic

b Covalent

c Metallic

d Cannot Determine

	5.3
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3 Determine whether the following compound is ionic, covalent, or metallic:

MgCl_2

a Ionic

b Covalent

c Metallic

d Cannot Determine

	5.3
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General Chemistry Multiple Choice Questions Chapter 5

1 Which of the following is not a property of an ionic solid?

- a High melting point
- b Soft, moldable
- c Conductor of electricity when melted
- d Often soluble in water

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2 An aqueous solution strongly conducts electrical current. The solution contains a(n)

- a Nonelectrolyte
- b Weak electrolyte
- c Strong electrolyte
- d Nonpolar solute

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3 Which of the following substances is a strong electrolyte when dissolved in water?

- a Sucrose
- b Ethanol
- c Sodium nitrate
- d Acetic acid
- e Ammonia

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General Chemistry Multiple Choice Questions Chapter 5

1 Which of the following is not a property of metal?

- a Ductile
- b Malleable
- c Lustrous appearance
- d Low melting points

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2 Which of the following accounts for the conductivity of metals?

- a Movement of ions
- b Strong ionic bonds
- c Mobility of valence electrons
- d High melting points

	5.5
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3 Which of the following properties describes how easily a metal can be hammered into shape?

- a Ductile
- b Lustrous appearance
- c Malleable
- d High melting points

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General Chemistry Multiple Choice Questions Chapter 5

- 1 Which of the following substances is known as a "sea of electrons"?
- a Ionic Compound
 - b Covalent Compound
 - c Metallic Compound
 - d None of the Above

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- 2 What type of chemical bond is characterized by the sharing of electrons?
- a Ionic Bond
 - b Covalent Bond
 - c Hydrogen Bond
 - d James Bond

	5.6
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- 3 What type of chemical bond is characterized by the giving/taking of electrons?
- a Ionic Bond
 - b Covalent Bond
 - c Hydrogen Bond
 - d James Bond

	5.6
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- 4 What type of chemical bond is characterized by no exchange of electrons?
- a Ionic Bond
 - b Covalent Bond
 - c Hydrogen Bond
 - d James Bond

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General Chemistry Multiple Choice Questions Chapter 5

1 What is the geometrical structure of ClF_3 ?

- a Trigonal planar
- c Trigonal bipyramid

- b Trigonal pyramid
- d Bent T

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2 What is the geometrical structure of CF_4 ?

- a Bent
- c Tetrahedral

- b Pyramidal
- d Trigonal Planar

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3 What is the geometrical structure of BF_3 ?

- a Bent
- c Pyramidal

- b Trigonal Planar
- d Tetrahedral

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General Chemistry Multiple Choice Questions Chapter 5

1 Of the following substances, only _____ has London dispersion forces as its only intermolecular force

- a CH₃OH b NH₃
c H₂S d CH₄
e HCl

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2 Of the following substances, only _____ has London dispersion forces as its only intermolecular force

- a CH₃OH b NH₃
c H₂S d Kr
e HCl

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3 Elemental Iodine (I₂) is a solid at room temperature. What is the major attractive force that exists among different I₂ molecules in the solid?

- a London dispersion forces b dipole-dipole rejections
c dipole-dipole interactions d covalent-ionic interactions
e ion-dipole interactions

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4 The predominant intermolecular force in CH₃-NH-CH₃ is _____

- a London dispersion forces b ion-dipole forces
c ionic bonding d dipole-dipole forces
e hydrogen bonding

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5 C₁₂H₂₆ molecules are held together by

- a ion-ion interactions b hydrogen bonding
c ion-dipole interactions d dipole-dipole interactions
e dispersion forces

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6 In which of the following molecules is hydrogen bonding likely to be the most significant component of the total intermolecular forces?

- a CH₄ b C₅H₁₁OH
c C₆H₁₃NH₂ d CH₃OH
e CO₂

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General Chemistry Multiple Choice Questions Chapter 5

7 Which of the following should exhibit hydrogen bonding?

- a** CH_3OH **b** CH_4
c PH_3 **d** LiH

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8 What types of intermolecular forces exist between HI and H_2S ?

- a** dipole-dipole and ion-dipole **b** dispersion, dipole-dipole, and ion-dipole
c dispersion, dipole-dipole, and hydrogen bonding **d** dispersion and dipole-dipole
e dispersion, hydrogen bonding, dipole-dipole, and ion-dipole

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General Chemistry Multiple Choice Questions Chapter 5

1 Which of the following lists the substances F_2 , HCl, and HF in order of increasing boiling point?

- a HF < HCl < F_2 b HF < F_2 < HCl
c HCl < F_2 < HF d HCl < HF < F_2
e F_2 < HCl < HF

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2 Which of these substances has the lowest boiling point?

- a NaCl b HF
c H_2O d H_2

	5.9
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3 Which of these substances has the highest melting point?

- a Cl_2 b H_2O
c KCl d $CaCl_2$

	5.9
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4 Which of these substances has the highest boiling point?

- a H_2O b H_2Se
c H_2S d H_2Te

	5.9
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5 Which of the following should have the lowest boiling point?

- a PH_3 b H_2S
c HCl d SiH_4
e H_2O

	5.9
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6 Of the following substances, _____ has the highest boiling point.

- a H_2O b CO_2
c CH_4 d Kr
e NH_3

	5.9
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General Chemistry Multiple Choice Questions Chapter 5

7 Of the following substances, _____ has the highest boiling point.

a N₂

b Br₂

c H₂

d Cl₂

e O₂

	5.9
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