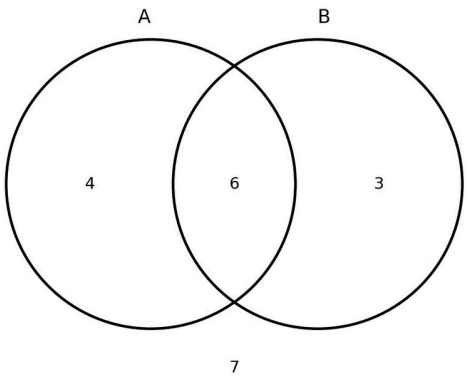
ALBERTA CHEMISTRY 20 · UNIT A · 25 QUESTIONS

Diversity of Matter and Chemical Bonding — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1

In the Venn diagram below, set A is substances that conduct electricity when molten and set B is substances with a high melting point. A substance is ionic if it is in both sets. How many of the substances in the diagram are ionic?



Question 1

In the Venn diagram below, set A is substances that conduct electricity when molten and set B is substances with a high melting point. A substance is ionic if it is in both sets. How many of the substances in the diagram are ionic?

A) 3

B) 4

C) 6

D) 7

A 3

B 4

C 6

D 7

Understand It with Pulse

Flag a mistake

2 **Calcium forms a Ca^{2+} ion and chlorine forms a Cl^{-} ion. The formula of calcium chloride is**

- **A** $CaCl_2$
- **B** Ca_2Cl
- **C** $CaCl$
- **D** $CaCl_3$

Understand It with Pulse | Flag a mistake

3 **The total number of atoms in one formula unit of $Ca(OH)_2$ is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

4 **In the compound Fe_2O_3, each iron ion has a charge of 3+. The correct name of this compound is**

- **A** iron(II) oxide
- **B** diiron trioxide
- **C** iron(III) oxide
- **D** iron oxide

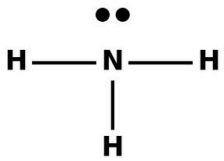
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5 **The number of sulfur atoms in one formula unit of $Al_2(SO_4)_3$ is**

- **A** 1
- **B** 3
- **C** 2
- **D** 4

Understand It with Pulse | Flag a mistake

6 **The Lewis diagram below shows ammonia, NH_3. The number of bonding pairs of electrons around the nitrogen atom is**



Question 6

The Lewis diagram below shows ammonia, NH_3. The number of bonding pairs of electrons around the nitrogen atom is

A) 1

B) 2

C) 3

D) 4

A 1

B 2

C 3

D 4

Understand It with Pulse

Flag a mistake

7 **Which of the following compounds contains a polyatomic ion?**

- **A** NaCl
- **B** MgO
- **C** FeS
- **D** $CaCO_3$

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8 **The total number of atoms in one formula unit of ammonium nitrate, NH_4NO_3, is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

9 **The shape of a methane molecule, CH_4, is**

- **A** tetrahedral
- **B** trigonal planar
- **C** bent
- **D** linear

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10 **A substance does not conduct electricity as a solid, but does conduct electricity when molten. The substance is most likely**

- **A** glucose, $C_6H_{12}O_6$
- **B** diamond
- **C** sodium chloride
- **D** copper

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11 **Aluminum forms an Al^{3+} ion, and the sulfate ion is SO_4^{2-}. In the formula of aluminum sulfate, the total number of oxygen atoms is _____.**

ANSWER

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12 **The electronegativity of hydrogen is 2.20 and the electronegativity of chlorine is 3.16. The bond between hydrogen and chlorine in HCl is best described as**

A polar covalent

B nonpolar covalent

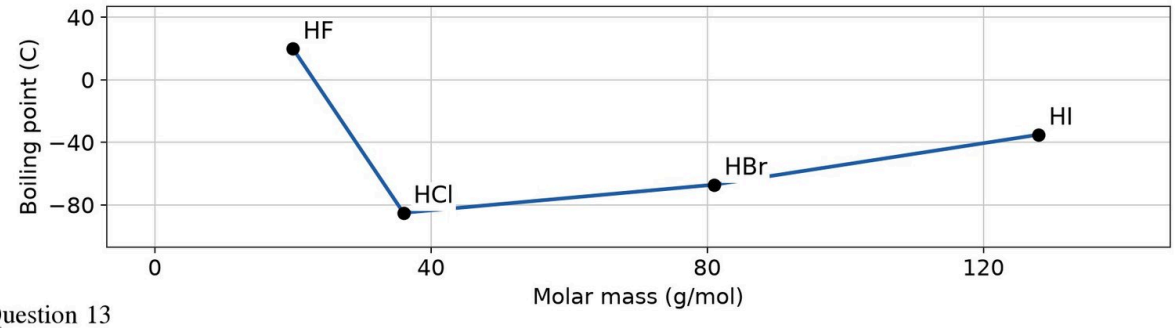
C ionic

D metallic

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13

The graph below plots the boiling point of each hydrogen halide against its molar mass. Which hydrogen halide has the strongest intermolecular forces?



Question 13

The graph below plots the boiling point of each hydrogen halide against its molar mass. Which hydrogen halide has the strongest intermolecular forces?

A) *HF*

B) *HCl*

C) *HBr*

D) *HI*

A HF

B HCl

C HBr

D HI

Understand It with Pulse

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14 **The total number of valence electrons in a molecule of carbon dioxide, CO_2, is ____.**

ANSWER

Understand It with Pulse | Flag a mistake

15 **Copper forms a Cu^{2+} ion, and the phosphate ion is PO_4^{3-}. The formula of copper(II) phosphate is**

A $Cu_3(PO_4)_2$

B $CuPO_4$

C $Cu_2(PO_4)_3$

D $Cu(PO_4)_2$

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16 **A substance has a melting point of 801°C, does not conduct electricity as a solid, and conducts electricity when molten or dissolved in water. This substance is best classified as**

A a molecular compound

B a metal

C a covalent network solid

D an ionic compound

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17 **A sulfur atom has 6 valence electrons. The number of electrons a sulfur atom gains when it forms its most common ion is ____.**

ANSWER _____

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18 **The correct name of NH_4Cl is**

A ammonia chloride

B ammonium chloride

C ammonium chlorate

D nitrogen tetrahydride chloride

Understand It with Pulse | Flag a mistake

19 **The hydrate $CuSO_4 \cdot 5H_2O$ has water molecules trapped in its crystal. The total number of hydrogen atoms in one formula unit of this hydrate is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

20 **Which of the following molecules is nonpolar?**

A H_2O

B CO_2

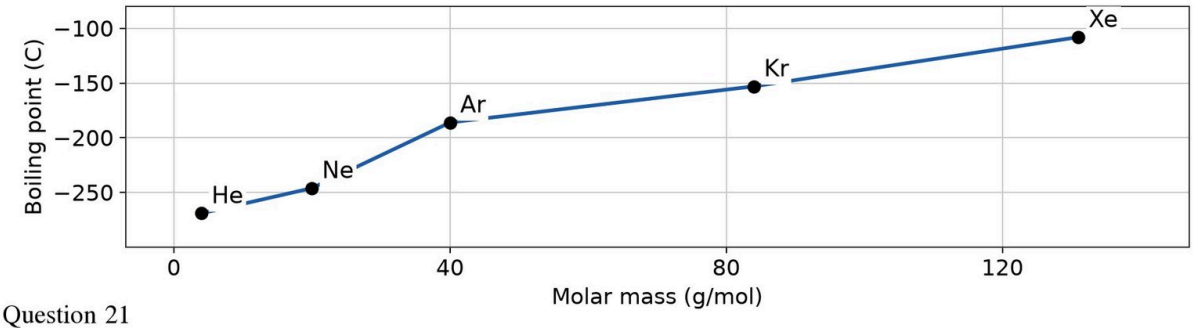
C NH_3

D HCl

Understand It with Pulse | Flag a mistake

21

The graph below plots the boiling point of each noble gas against its molar mass. Which noble gas has the strongest London dispersion forces?



Question 21

The graph below plots the boiling point of each noble gas against its molar mass. Which noble gas has the strongest London dispersion forces?

A) *He*

B) *Ar*

C) *Kr*

D) *Xe*

A He

B Ar

C Kr

D Xe

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22 **In a molecule of nitrogen gas, N_2, the two nitrogen atoms are joined by a triple covalent bond. The total number of electrons shared between the two atoms is ____.**

ANSWER _____

Understand It with Pulse | Flag a mistake

23 **A Lewis diagram of an oxygen molecule, O_2, shows each oxygen atom with two lone pairs, with the atoms joined so that each atom has an octet. The bond between the oxygen atoms is a**

Question 23

A Lewis diagram of an oxygen molecule, O_2, shows each oxygen atom with two lone pairs, with the atoms joined so that each atom has an octet. The bond between the oxygen atoms is a

A) single bond

B) ionic bond

C) double bond

D) triple bond

A single bond

B ionic bond

C double bond

D triple bond

Understand It with Pulse | Flag a mistake

24 **In the compound SnF_2, each tin ion has a charge of 2+. The correct name of this compound is**

A tin difluoride

B tin fluoride

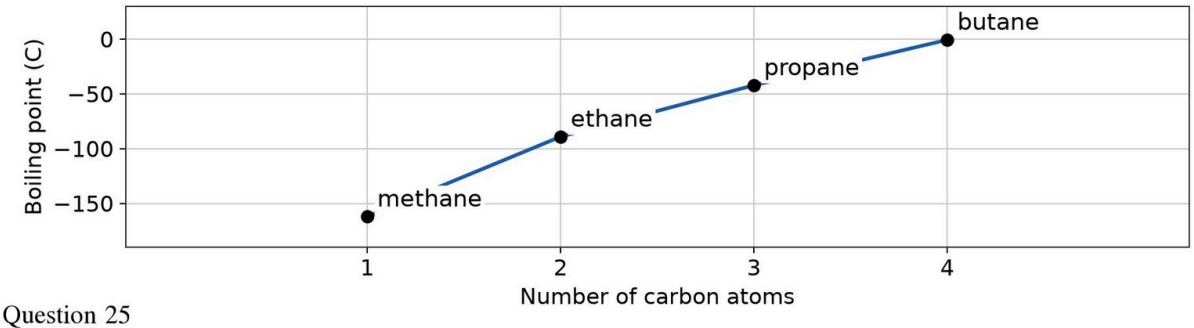
C tin(I) fluoride

D tin(II) fluoride

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25

The graph below plots the boiling point of each alkane against the number of carbon atoms in its molecule. Which alkane has the strongest London dispersion forces?



Question 25

The graph below plots the boiling point of each alkane against the number of carbon atoms in its molecule.

Which alkane has the strongest London dispersion forces?

A) methane

B) ethane

C) propane

D) butane

A methane

B ethane

C propane

D butane

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Flag a mistake

ANSWER KEY

1.	C	**10.**	C	**19.**	10
2.	A	**11.**	12	**20.**	B
3.	5	**12.**	A	**21.**	D
4.	C	**13.**	A	**22.**	6
5.	B	**14.**	16	**23.**	C
6.	C	**15.**	A	**24.**	D
7.	D	**16.**	D	**25.**	D
8.	9	**17.**	2		
9.	A	**18.**	B		

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