

HW09 - Liquids & Solids

Started: Oct 20 at 9:09am

Quiz Instructions

Homework 09 - Liquids & Solids

Question 1

1 pts

Which of the following statements regarding intermolecular forces (IMF) is/are true?

1. IMF result from attractive forces between regions of positive and negative charge density in neighboring molecules.
2. The stronger the bonds within a molecule are, the stronger the intermolecular forces will be.
3. Only non-polar molecules have instantaneous dipoles.

1 only

1, 2, and 3

1 and 3

1 and 2

2 only

3 only

2 and 3

Question 2

1 pts

Put the following compounds in order of increasing melting points.

LiF, HF, F₂, NF₃

F₂, NF₃, LiF, HF

LiF, HF, NF₃, F₂

LiF, HF, F₂, NF₃

F₂, NF₃, LiF, HF

F₂, NF₃, HF, LiF

Question 3

1 pts

What type of intermolecular forces would you expect to find in a pure liquid sample of carbon tetrachloride?

interionic (ionic)

dipole-dipole

London

hydrogen bonding

Question 4

1 pts

A drop of liquid tends to have a spherical shape due to the property of...

surface tension.

capillary action.

close packing.

vapor pressure.

viscosity.

Question 5

1 pts

Surface tension describes...

the forces of attraction between the surface of a liquid and the air above it.

capillary action.

adhesive forces between molecules.

the forces of attraction between surface molecules of a solvent and the solute molecules.

the inward forces that must be overcome in order to expand the surface area of a liquid.

the resistance to flow of a liquid.

Question 6

1 pts

Predict which of butane (C_4H_{10}) or propanone (CH_3COCH_3) has the greater viscosity. Assume that they are both at the same temperature and in their liquid form.

It's impossible to know.

butane

They have equal viscosities.

propanone

Question 7

1 pts

Which would you expect to be the most viscous?

C_4H_8 at $30^\circ C$

C_8H_{18} at $50^\circ C$

C_4H_8 at $50^\circ C$

C_8H_{18} at $30^\circ C$

Question 8

1 pts

The vapor pressure of all liquids...

decreases if the volume of the container increases.

is the same at their freezing points.

increases with temperature.

is the same at 100°C.

Question 9

1 pts

Based on the general concepts that govern intermolecular attractions, which of the following orderings of fluorocarbons is correct when going from highest to lowest boiling point?

1. CF_4

2. $\text{F}_3\text{C}-(\text{CF}_2)_4-\text{CF}_3$

3. $\text{F}_3\text{C}-(\text{CF}_2)_2-\text{CF}_3$

3, 2, 1

2, 3, 1

2, 1, 3

3, 1, 2

1, 3, 2

1, 2, 3

Question 10

1 pts

Tetrabromomethane has a higher boiling point than tetrachloromethane.

It's impossible to know.

False

True

Question 11**1 pts**

Which of KBr or CH₃Br is likely to have the higher normal boiling point?

- KBr
- It is impossible to tell.
- They will have the same boiling point.
- CH₃Br

Question 12**1 pts**

Which of the following would you expect to boil at the lowest temperature?

- KF
- C₃H₆
- CH₄
- C₈H₁₈
- PCl₃

Question 13**1 pts**

A liquid with a high vapor pressure is called...

- cold.
- hot.
- viscous.
- volatile.

Question 14**1 pts**

Which would you expect to have the highest vapor pressure at a given temperature?

C₂H₆

NaCl

SBr₄

C₅H₁₂

Question 15**1 pts**

Rank the following in order of increasing vapor pressure at a fixed temperature: H₂O, CH₃Cl, He, NaCl

H₂O < CH₃Cl < He < NaCl

He < CH₃Cl < H₂O < NaCl

H₂O < NaCl < CH₃Cl < He

NaCl < H₂O < CH₃Cl < He

He < H₂O < CH₃Cl < NaCl

Question 16**1 pts**

Which of the following solids is a covalent network?

Ni(s)

CaCO₃(s)

H₂O(s)

SiO₂(s)

Question 17**1 pts**

Which of the following, in the solid state, would be an example of a covalent crystal?

- water
- iron
- diamond
- barium fluoride
- carbon dioxide

Question 18**1 pts**

Diamond and graphite are two crystalline forms of carbon. In which form are the C atoms arranged in flat sheets with one C bonded to three nearby C atoms?

- diamond
- neither of these
- graphite

Question 19**1 pts**

Which of the following, in the solid state, would be an example of a molecular crystal?

- calcium fluoride
- carbon dioxide
- iron
- diamond

Question 20**1 pts**

Which of the following, in the solid state, would be an example of an ionic crystal?

sodium nitrate

carbon dioxide

copper

diamond

Question 21**1 pts**

Metallic solids are solids composed of metal atoms that are held together by metallic bonds. They also tend to be good conductors because...

the electrons in metallic solids are delocalized.

metals are malleable and can be pounded into sheets.

metals are ductile and can be pulled into wires.

the electrons in metallic solids are tightly bound allowing other electrons to flow freely.

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