

HW09 - Liquids & Solids

 This is a preview of the published version of the quiz

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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.

☐ 2 and 3

☐ 1 only

☐ 1 and 3

☐ 1 and 2

☐ 1, 2, and 3

☐ 2 only

☐ 3 only

Question 2

1 pts

Put the following compounds in order of increasing melting points.

LiF, HF, F₂, NF₃

☐ LiF, HF, F₂, NF₃

☐

LiF, HF, NF₃, F₂

☐ F₂, NF₃, HF, LiF

☐ F₂, NF₃, LiF, HF

☐ F₂, NF₃, LiF, HF

Question 3

1 pts

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

☐ hydrogen bonding

☐ London

☐ dipole-dipole

☐ interionic (ionic)

Question 4

1 pts

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

☐ close packing.

☐ viscosity.

☐ capillary action.

☐ vapor pressure.

☐ surface tension.

Question 5

1 pts

Surface tension describes...

- ☐ the forces of attraction between surface molecules of a solvent and the solute molecules.
- ☐ the forces of attraction between the surface of a liquid and the air above it.
- ☐ the inward forces that must be overcome in order to expand the surface area of a liquid.
- ☐ the resistance to flow of a liquid.
- ☐ capillary action.
- ☐ adhesive forces between molecules.

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.

- ☐ butane
- ☐ It's impossible to know.
- ☐ propanone
- ☐ They have equal viscosities.

Question 7

1 pts

Which would you expect to be the most viscous?

- ☐ C_8H_{18} at $30^\circ C$
- ☐ C_4H_8 at $30^\circ C$
- ☐ C_8H_{18} at $50^\circ C$
- ☐ C_4H_8 at $50^\circ C$

Question 8

1 pts

The vapor pressure of all liquids...

- ☐ is the same at their freezing points.
- ☐ increases with temperature.
- ☐ is the same at 100°C.
- ☐ decreases if the volume of the container increases.

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

- ☐ 2, 1, 3
- ☐ 1, 3, 2
- ☐ 3, 1, 2
- ☐ 3, 2, 1
- ☐ 2, 3, 1
- ☐ 1, 2, 3

Question 10

1 pts

Tetrabromomethane has a higher boiling point than tetrachloromethane.

- ☐ It's impossible to know.
- ☐ True
- ☐ False

Question 11**1 pts**

Which of KBr or CH_3Br is likely to have the higher normal boiling point?

- ☐ They will have the same boiling point.
- ☐ CH_3Br
- ☐ KBr
- ☐ It is impossible to tell.

Question 12**1 pts**

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

- ☐ C_8H_{18}
- ☐ C_3H_6
- ☐ CH_4
- ☐ PCl_3
- ☐ KF

Question 13**1 pts**

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

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

Question 14**1 pts**

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

☐ C_2H_6 ☐ SBr_4 ☐ C_5H_{12} ☐ NaCl **Question 15****1 pts**

Rank the following in order of increasing vapor pressure at a fixed temperature: H_2O , CH_3Cl , He , NaCl

☐ $\text{He} < \text{H}_2\text{O} < \text{CH}_3\text{Cl} < \text{NaCl}$ ☐ $\text{NaCl} < \text{H}_2\text{O} < \text{CH}_3\text{Cl} < \text{He}$ ☐ $\text{He} < \text{CH}_3\text{Cl} < \text{H}_2\text{O} < \text{NaCl}$ ☐ $\text{H}_2\text{O} < \text{NaCl} < \text{CH}_3\text{Cl} < \text{He}$ ☐ $\text{H}_2\text{O} < \text{CH}_3\text{Cl} < \text{He} < \text{NaCl}$ **Question 16****1 pts**

Which of the following solids is a covalent network?

☐ $\text{H}_2\text{O}(\text{s})$ ☐ $\text{Ni}(\text{s})$ ☐ $\text{CaCO}_3(\text{s})$ ☐ $\text{SiO}_2(\text{s})$

Question 17**1 pts**

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

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

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?

- ☐ graphite
- ☐ neither of these
- ☐ diamond

Question 19**1 pts**

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

- ☐ calcium fluoride
- ☐ iron
- ☐ diamond
- ☐ carbon dioxide

Question 20**1 pts**

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

- ☐ carbon dioxide
- ☐ copper
- ☐ sodium nitrate
- ☐ 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 tightly bound allowing other electrons to flow freely.
- ☐ metals are ductile and can be pulled into wires.
- ☐ metals are malleable and can be pounded into sheets.
- ☐ the electrons in metallic solids are delocalized.

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